



LAND AT CROSS COMMON ROAD, DINAS POWIS:

**PROPOSED NEW ROAD ACCESS AND RESIDENTIAL
DEVELOPMENT**

ECOLOGICAL MITIGATION STRATEGY

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Land at Cross Common Road, Dinas Powis: Proposed New Road Access and Residential Development

Ecological Mitigation Strategy

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NON-TECHNICAL SUMMARY

An ecological assessment was carried out of land adjacent to Cardiff and Cross Common Roads, on the southern boundary of Dinas Powis in South Wales by Celtic Ecology in September 2014 in support of an outline planning application by the landowner to the Vale of Glamorgan Council for residential development on the site.

The assessment and discussions with the Vale of Glamorgan Council and Natural Resources Wales identified the presence (on and or adjoining the site) of a number of habitats and species which are either legally protected or are in receipt of protection through the planning system.

The habitats and features recorded on and adjacent to the site included:

- Broad-leaved semi-natural woodland
- Continuous and scattered scrub
- Scattered trees
- Improved grassland
- Semi-improved neutral grassland
- Open water (standing)
- Running water
- Hedgerows
- Non-native invasive plants

No protected species were recorded from the site; however, the presence of various species in the locality and suitable habitat present on and adjacent to the site has led to an assumption of the presence of the following:

- Bats;
- Dormice;
- Great crested newt;
- Otters;
- Breeding birds; and
- Reptiles.

Mitigation will be required.

In consultation with the Vale of Glamorgan Council and Natural Resources Wales, it has been agreed that as the habitats present do not lend themselves to certain surveys and that surveys may not actually provide any positive information. Therefore, a mitigation strategy to determine the level and extent of mitigation has been prepared to direct on site operations, and provide detail on post development mitigation management has been developed in order to maintain and enhance the favourable conservation status of the protected species on the site and ensure that there is no net loss of habitat.

No protected species were recorded on the site; however:

- Bats: approximately 10 trees on the site will require removal to facilitate the housing development. All the trees have been subject of a ground based assessment and dusk emergence / dawn return to roost surveys; two trees were confirmed as containing bat roosts; these are to be retained within the development. Should at

any stage bats be found to be using any of the other trees, appropriate mitigation will be designed and incorporated into the overall site design; an NRW development licence would be sought and obtained prior to any works to these additional trees commencing. Enhancement measures to benefit bats will be incorporated into the design of the housing development.

- Evidence of dormouse has been recorded on a proposed development site approximately 600m to the north west of the site. There is very good habitat connectivity between the two sites and suitable habitat on the Cross Common Road site. Therefore, an assumption has been made that this species will be present. Appropriate mitigation has been incorporated into the site design. An NRW development licence will be required in respect of this species.
- There is a sizeable breeding population of great crested newts present in a pond approximately 300m to the south west of the site. There is also an unconfirmed record of this species in ponds in back gardens of properties along Cross Common Road. There is therefore some potential for great crested newts to use the site as terrestrial habitat only as there are no suitable breeding sites on the development site. This terrestrial use is likely to be for the duration of the active season only as the site is low lying and waterlogged with few opportunities for hibernation; the only exceptions being the boundary hedges which may be high enough to not be waterlogged. A method statement is attached for clearing the site in such a way as they are not harmed. An NRW development licence will be sought in the event that they are discovered on the site during any part of the development.
- Otter: it should be assumed that this species will utilise the Cadoxton River from time to time. Account should therefore be taken of it and measures implemented in order to prevent harm coming to any individuals of this species that may be affected by the proposed development.
- Reptiles: it should be assumed that reptiles will use the site during the active season. It is unlikely that they will use the fields during the hibernation period as the fields are low lying and waterlogged. Mitigation will be required; a method statement to prevent harm to reptiles during site clearance operations is attached.
- Breeding birds should be assumed to be using hedgerows, trees and scrub for nesting purposes; it is unlikely that ground nesting birds will utilise the fields due to the proximity of overlooking and overshadowing trees and scrub and their potential to provide cover and act as predator perches. Clearance of suitable breeding habitat should therefore be timed to avoid the breeding season.

1 INTRODUCTION

1.1 DEVELOPMENT APPLICATION BACKGROUND

The development site is currently subject of two planning applications:

- 1) The land within the red line boundary is currently the subject of a Reserved Matters planning application having been granted outline planning for up to 50 housing units.
- 2) Land within the red line boundary was subject of a detailed full planning application by the Vale of Glamorgan Council for the creation of a new road linking Cross Common Road to Cardiff Road; this would allow the disuse / demolition of an existing road bridge over the Cadoxton River and the continued use of Cross Common Road. This project has been completed.

1.2 SURVEY AREA

The zone of influence (survey area) is defined by the red line site application boundary (Concept Plan, Harmers).

Mitigation will require the use of land outwith the red line boundary but which is within the ownership of the Lee Estate.

1.3 SITE DESCRIPTION

The site is approximately 2.15ha in size and is located in Dinas Powys, south west of Cardiff (centred on NGR ST 154704; Figure 1). The site comprises of three fields, field one is a poor semi improved grassland, currently used as horse turnout, with scrub/hedgerow boundaries. Field two is a semi –improved neutral grassland situated on a gently sloping aspect from east to west. The bramble (*Rubus fruticosus*) scrub boundaries consist predominantly of blackthorn (*Prunus spinosa*), with remnants of hazel (*Corylus avellana*), elder (*Sambucus nigra*) and pedunculate oak (*Quercus robur*). Field three is a semi-improved neutral grassland, fringed by woodland, the woodland consisting frequently of blackthorn and bramble, the occasional hawthorn (*Crataegus monogyna*), hazel, sycamore (*Acer pseudoplatanus*), and white poplar (*Populus alba*), with locally abundant patches of brooklime, (*Veronica beccabunga*) and floating sweet-grass (*Glyceria fluitans*).

South east of the site is Shortlands Wood (SINC), which leads to open fields with scrub/hedgerow boundaries, providing relatively intact connectivity towards the wider wooded landscape. To the west of the site is the A4055 which runs parallel with the Cadoxton River and neighbours Parc Bryn-Y-Don which again provides relatively good connectivity to the wider landscape to the west. North of the site is a large built up residential area.

Figure 1 - location of the site (individual numbered)



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1.4 MITIGATION STRATEGY

1.4.1 Mitigation Strategy Principles

This mitigation strategy has been developed in consultation with the Vale of Glamorgan Council and Natural Resources Wales.

Protected species are present on the site as are a number of ecologically valuable habitats. In order to protect these during the construction and operational phases of the development, this mitigation strategy has the following principles:

- 1) Avoidance and minimisation of adverse impacts at the design stage;
- 2) Establishment of ecological parameters and mitigation requirements in advance of detail planning design;
- 3) Minimisation of adverse impacts through the use of method statements;
- 4) Implementation of appropriate mitigation and compensation in advance of works;
- 5) Provision of a robust management plan;
- 6) Provision of robust and effective monitoring of mitigation and compensation; and
- 7) Provision of appropriate and timely remedial action should it be necessary.

1.4.2 Mitigation Strategy Focus

This strategy focuses on five specific ecological features: bats, dormice, great crested newts and reptiles and breeding birds.

This approach will provide an appropriate level of mitigation and protection. This approach is possible due to the improved (through grazing horses and ponies) nature of the site and the reduced ecological value of the majority of the site's total area i.e. the habitats and species present on the site are limited to specific areas as a result of the current land use and management practices in place across the site.

Additionally, there are certain species which would usually require mitigation as a result of this size and type of development. However, in this instance, the way in which they use the site and the features means that direct mitigation will not be required as the mitigation for the direct loss of a certain feature will benefit the species in question. For example, the loss of hedgerows would result in the loss of dormouse habitat and habitat suitable for foraging bats; The presence of dormice requires that mitigation is put in place for all the ecological impacts i.e. directly mitigating for the loss of hedgerows, functional dormouse habitat and bat roosting, foraging and commuting habitat.

The mitigation for each feature will be set out individually following a summary of the survey information / on-site information and impact assessment with a summary of the proposed mitigation.

An over view of the mitigation is shown on the Mitigation Strategy Overview Plan at Appendix B. Dormouse mitigation for the housing development is shown on drawing 994/PA/03C. The landscaping proposals for the housing development are shown on drawings 994/PA/01F and 994/PA/02F. Mitigation in respect of the road realignment is shown on drawing 1391 1301 A and has already been implemented.

1.4.3 Mitigation Strategy Subjects

Table 1 - mitigation subject and recipients

Mitigation subject	Additional ecological features covered
Dormouse	Hedgerows
	Bats
	Breeding birds
	Continuous and scattered scrub
	Reptiles
Bats	Hedgerows
	Dormouse
	Breeding birds
	Scattered trees
Otters	Cadoxton River & riparian corridor
Great crested newt	Open water (standing)
	Reptiles
Breeding birds	Breeding birds
Reptiles	Amphibians (great crested newt)

1.5 SPECIFIC SPECIES INFORMATION

For details of habitat and species surveys, results, evaluations and impact assessments, please refer to the Preliminary Ecological Assessment¹.

Extracts and summaries are provided in each section below to provide relevant background information.

1.6 LAND OWNERSHIP

All the land within the red line boundary and that proposed for mitigation and compensatory use is currently owned by the Lee Estate and managed by local graziers on their behalf. On receipt of the Reserved Matters planning permission, the housing development site ownership will be transferred to Edenstone Homes who will then implement the outline and reserved matters permissions.

1.7 DEVELOPMENT PHASING

It is anticipated that the development across the whole site will occur in two phases with anticipated dates as follows:

Table 2 - Construction phasing programme

Phase	Start date	Completion date	Mitigation start date
New road & bridge works	March 2016	September 2016	February 2016
Housing	March 2018	TBC	January 2018

Please be aware that these dates may change; any and all changes will be notified to the Vale of Glamorgan Council and NRW as soon as they are known.

1.8 IMPLEMENTATION

The mitigation detailed within this strategy will be implemented through the use of an Ecological Design Strategy (EDS), thereby ensuring that both the construction and operational phases are both managed to prevent, minimise and negate adverse impacts and maintain and enhance the site's ecological value.

1.9 RESPONSIBILITIES

The responsibility for the implementation of this mitigation strategy lies with the Lee Estate, the Vale of Glamorgan Council and Edenstone Homes and their respective employees, all consultants, contractors, sub-contractors and agents employed by them and involved in the project delivery and management during the construction and operational phases of the road realignment and housing development projects.

¹ Celtic Ecology (February 2015). *Land at Cross Common Road, Dinas Powys - Proposed Development: - Preliminary Ecological Assessment.*

The Vale of Glamorgan Council will be responsible for the clearance of the hedgerow loss associated with the new road construction. The Lee Estate will take responsibility for the establishment of the mitigation.

Ongoing implementation of the mitigation and management plans for the housing development will be taken over by Edenstone Homes, in combination with the Lee Estate and any and all successors in title, including the Vale of Glamorgan Council and any Private Management Company established to manage all or part of the site.

1.9.1 Ecological Monitoring

An Ecological Clerk of Works (ECoW) will be appointed to supervise all elements of the site clearance, mitigation establishment and initial management plan implementation. A report will be submitted to the Vale of Glamorgan Council and NRW for evaluation. It is anticipated that there will be weekly summary reports to the Vale of Glamorgan Council during construction periods and standard reporting to NRW as required by the dormouse development licence. The necessity for remedial actions would be based on these reports. The Vale of Glamorgan Council will audit the scheme against both the EMS and EDS. Any failings will be reported to the relevant body.

The monitoring will be undertaken by a suitably experienced and licensed ecologist. All monitoring associated with the dormouse development licence will be undertaken by the named ecologist.

SPECIES SPECIFIC MITIGATION

2 BATS

2.1 SUMMARY

No specific bat surveys other than a ground based assessment of potential roost features were undertaken during the Preliminary Ecological Assessment. It was assumed that bats would use the hedges and vegetation for foraging and commuting purposes.

There were no structures on the site which could be utilised for bat roosting purposes.

A number of trees were recorded from the survey area which had the potential to provide suitable bat roosting habitat.

At the request of the Vale of Glamorgan Council, further bat surveys of the site were undertaken during 2017, with particular emphasis on the trees to be removed.

Two trees were confirmed as bat roosts following dusk emergence and dawn return to roost surveys undertaken in 2017.

A range of bat species was identified as using the site.

2.2 BAT ECOLOGY

British bats are small flying nocturnal mammals that feed exclusively upon insects. There are 17 species resident in Britain, ranging in size from the small pipistrelle species (*Pipistrellus* sp.) weighing in at approximately 5 g up to the larger noctule (*Nyctalus noctula*) weighing approximately 35 g. Bats are active from April through to October and hibernate when insects are in short supply in the winter months. Bats generally emerge from hibernation in late March - early April and move into transition roosts before the female bats move to maternity sites by the beginning of May where they give birth to a single baby between June and early July. The baby is reared solely by the mother and is weaned and independent by end of August. After breeding, bats move to transition roosts and females will visit males at mating roosts. During the autumn, bats feed intensively to gain sufficient weight for hibernation.

Although traditionally trees, caves and rock faces were used by roosting bats and are still used, many different structures are used nowadays by bats, which take advantage of readymade (manmade) roosts. Structures used frequently include bridges, ice-houses, pillboxes, disused railway tunnels, houses and barns etc. Bats do not hold territories but have foraging ranges which vary in size between species: from just 3-4km from the roost for the smaller bats while noctules may fly 20km or more. Threats to bats include habitat destruction and the severance of commuting routes, use of agricultural pesticides, intensification of farming methods and deliberate persecution by man. Bats have few natural predators; the domestic cat probably accounts for most losses.

2.3 LEGISLATION

All British bats and any place used for shelter or protection, or a breeding site or resting place (their roosts) are fully protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Species and Habitats Regulations 2010 (as amended). Roosts are protected whether or not bats are present.

Where a European protected species or group such as bats is present, a development may only proceed, under a licence issued by the Natural Resources Wales (NRW) who is the appropriate authority responsible for issuing licences under Section 44 of the above Regulations.

2.4 BATS – EVALUATION, IMPACT CHARACTERISATION AND ASSESSMENT

2.4.1 Bats – evaluation

Bats are protected by international and domestic legislation, a reflection of their increasingly threatened status; bats are therefore of **high international** value.

The trees confirmed as bat roosts are of **high** ecological value. The trees scheduled for removal are considered to be of **low** ecological value to and for bats; however, it should be noted that features useable by bats can appear and be utilised rapidly, so all trees on the development site should be considered to be potentially **high** ecological value.

There are no structures on the site which could be used by bats for roosting purposes.

Given the probable use of the unmanaged hedgerows/scrub by bats, providing existing boundaries are retained there will be no need for any further bat surveys. Individual trees (with the exception of those already identified as bat roosts) scheduled for removal may need resurvey should any natural modification occur i.e. should potential roosting features become available. These surveys may include:

- Ground based assessment;
- Tree climb and inspect; and
- Activity (emergence / dawn return to roost) surveys.

It is noted that the trees on the boundary between Fields 1 & 3 and those in the woodland area of Field 3 are likely to be removed for safety reasons. Mitigation in the form of tree and hedge planting has been included in the site design for their loss. If features suitable for bats are found, then the tree loss mitigation will need to be modified to take account of this. Pole mounted bat boxes have also been included within the mitigation.

If bats are found to be present and using the trees scheduled for removal for roosting purposes, a Natural Resources Wales will be required prior to any felling or pruning work being undertaken.

2.4.2 Bats – impact characterisation

Providing existing boundaries and trees with potential roosting features are retained there will only be a limited loss of foraging/commuting routes for bats.

If trees with confirmed roosts or potential roost features are subject to felling or modification it is possible that there will be a direct impact (loss) on bat roosting habitat.

It is possible that foraging, roosting and commuting activity along the site's boundaries may be adversely impacted as a result of potential increased lighting levels during the operational phase of the development.

2.4.3 Bats - impact assessment without mitigation

There would be a **certain significant permanent adverse impact** on bats at a **site / local level** as a result of the loss of trees with confirmed bat roosts and a **probable moderate medium term adverse** impact at a **site level** on bats as a result of the loss of foraging habitat and increased post development site lighting.

It is not possible to accurately characterise any impacts resulting from the loss of trees which develop potential roost features without first undertaking further surveys of those trees which are to be lost as a result of the development.

2.4.4 Bats – potential mitigation measures

All trees with confirmed bat roosts will be retained within the development and will not therefore require mitigation in respect of loss. Mitigation can therefore be limited to the avoidance of indirect impacts (lighting etc).

It is proposed to undertake the following actions:

- All trees containing confirmed bat roosts will be retained;
- Any and all lighting will be directed away from hedges, trees and landscaping and / or baffled to remove / minimise impacts on flight lines and reduce overall light spill;
- Lighting will be minimised and be of type which causes least impact on bats wherever possible;
- All vegetation and tree clearance will be minimised to retain as much of the existing habitat as possible;
- Trees will be felled during the winter months to reduce the chances that bats will be present at the time of felling;
- Bat boxes will be erected on suitable buildings within the proposed development and on trees or poles around the perimeter of the site to provide suitable roosting opportunities;
- All trees scheduled for felling and pruning operations will be subject ground based assessments in advance of the work; and
- A licensed bat ecologist will be “on call” for the duration of the project in the event that bats are discovered, in which case the work will cease immediately, Natural Resources Wales will be contacted. A development licence may be required prior to any further work being carried out. No further work will be undertaken without the approval of NRW.

2.4.5 Bats - impact assessment with mitigation

It is considered that there will be an **unlikely minor short term adverse** impact on bats at a **local** level as a result of vegetation removal.

2.4.6 Bats - significance of the impact

Without mitigation

It is considered that the impact would be of a **minor** significance.

With mitigation

It is considered that the impact would be of a **neutral** significance

2.5 BATS - DETAILED MITIGATION

Pole mounted bat boxes will be provided on the line of the replacement vegetation across the site.

Bat boxes will be installed on the most appropriate units within the housing development.

The landscaping scheme for the housing development will provide replacement vegetation and dark corridors to maintain bat foraging and commuting habitats.

All the trees on the site scheduled for removal and / or pruning will be subject of a repeat ground based tree assessment and where necessary, climb and inspect surveys and emergence / return to roost surveys. Appropriate mitigation will be designed and implemented (in accordance with a Natural Resources Wales development licence if necessary).

Please refer to the mitigation described for dormice in section 2.6 above for details of how the hedges will be translocated and mitigated.

All vegetation clearance will be undertaken during the winter months to avoid removing flightlines during the bat active season.

2.5.1 Lighting

The lighting design will ensure that there will be no lighting of any hedge or habitat corridor unless it is an absolute requirement (due to safety concerns and / or design standards).

Lights in the vicinity of vegetation likely to be used by dormice and road crossings will be positioned, directed appropriately and provided with baffles and / or shields to prevent light spill onto vegetation and up into the sky.

Light levels will be monitored and adjusted as necessary to benefit bats and other protected species.

2.6 MONITORING

The requirement for monitoring will be dependent on whether or not any mitigation is required

3 DORMOUSE

3.1 SUMMARY

Dormice surveys were not carried out; however, the presence of dormice was established at a development site 600m to the north east. The sites are well connected by woodland and dense extensively managed hedgerows. Therefore, the presence of dormice in vegetation on the road realignment and housing development sites should be assumed.

3.2 DORMOUSE ECOLOGY

Dormice (*Muscardinus avellanarius*) are one of Britain's smallest, rarest and shiest mammals. Their weight varies between approximately 14g when they emerge from hibernation in April up to 25g in the autumn prior to commencing hibernation. They have a dense golden fur with a furred tail approximately the same length as the body. The sexes are similar. They eat insects, pollen, fruit and nuts.

Their habitat preference is for broad leaved woodland with a varied age canopy over a well developed and varied age understorey. Dormice are arboreal during the active season (April to October), making woven nests (unlike wood mice and other small mammals which make untidy piles of nesting material), frequently using honeysuckle or clematis. Dormice hibernate at or below ground level using holes in tree root systems, old mammal burrows or simply making a nest, usually a pile of material, on the ground. They are predated by almost anything which can find them, owls, stoats (*Mustela ermine*) and weasels (*Mustela nivalis*) being the most common predators. It should be noted that wood mice (*Apodemus sylvaticus*) will predate dormice given the opportunity.

3.3 LEGISLATION

Dormice, any place used for shelter or protection, or a breeding site or resting place are fully protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Species and Habitats Regulations 2010 (as amended). The places of shelter are protected whether or not the animals are present.

Where a European protected species such as otter is present, a development may only proceed, under a licence issued by Natural Resources Wales who is the appropriate authority responsible for issuing licences under Section 44 of the above Regulations.

3.4 DORMICE - EVALUATION, IMPACT CHARACTERISATION AND ASSESSMENT

3.4.1 Dormice - evaluation

Dormice are protected by international and domestic legislation which reflects their generally low numbers and the decreasing amount of suitable habitat available to them. They are therefore of **very high international** value.

The site appears to provide suitable permanent habitat for dormice due to the areas of scrub, trees and woodland available and the connections these provide to adjacent suitable habitat.

The presence of dormice in close proximity to the site indicates that the proposed development site could be of **high local** importance for dormice. However, the gappy nature of the boundary hedges, particularly on the southern and western boundaries of the site suggests that the suitability of the site could be better; therefore, it is considered that the site is likely to be of **moderate local** value to this species.

3.4.2 Dormice - impact characterisation

3.4.2.1 Road Realignment

The site boundaries will be retained with the exception of a direct loss of ≈ 146 linear metres ($825\text{m}^2 / 0.08\text{ha}$) of hedgerow as a result of the new Cross Common Road construction (drawing 1391 201 Rev C); in addition to this there will be a loss of ≈ 40 linear metres (0.03ha) of functional habitat connectivity between the cleared areas as a result of habitat fragmentation. This amounts to a total loss of 186 linear metres (0.11ha) of suitable dormouse habitat.

In summary, there will be a direct loss of $\approx 0.38\text{ha}$ of suitable dormouse habitat and a loss of approximately 0.03ha of functional habitat (i.e. retained but unavailable for use by dormice), a total area of $\approx 0.41\text{ha}$.

3.4.2.2 Residential development

There will be a loss to the of poor quality (incomplete) connecting habitat ($\approx 0.1\text{ha}$) across the site between Fields 1 and 3 due to the removal of a number of mature poplar trees which mark the line of a probable former field boundary and stream as a result of the housing development.

An area of hazel, bramble and thorn scrub, $\approx 0.595\text{ha}$, will also be lost to the proposed housing development (*Concept Plan - Cross Common Road*, Harmers & drawing 1628 100 Planning Layout).

All the existing adjacent woodland areas will be retained. However, there may be some anthropogenic impacts due to human activity and disturbance and domestic cats.

3.4.2.3 Summary

There will be a total of 1.005ha of direct and functional vegetation loss as a result of the road realignment and residential developments.

3.4.3 Dormice - impact assessment without mitigation

It is considered that without mitigation this is likely to result in a **certain moderate permanent adverse** impact on dormice from the site as part of the clearance operation prior to the construction phase as well as a potential for harming animals during the clearance itself and a **probable moderate medium term adverse** impact during the operational phase of the development as a result of lighting, disturbance and a possible higher risk of predation.

The loss of the mature poplar trees will result in a **probable slight permanent adverse** impact on connective dormouse habitat.

Please note that it is currently not possible to provide an impact assessment in respect of predation by domestic cats as dormouse population data is very difficult to ascertain due to their size, lifestyle and habitat preferences. None of the available literature suggests that dormice are a significant proportion of cats' prey / diet or that populations suffer significantly as a result of such predation. Additionally, there is no information available about predation rates on dormice by cats.

3.4.4 Dormice - mitigation measures

It is proposed that the need for mitigation will be reduced by minimising through design the amount of hedges, woodland and scrub habitat lost and restoring and enhancing retained functional habitat. Therefore, mitigation will be based on the following principles:

- With the exception of the losses detailed above, retaining hedges in situ and planting up gaps and, wherever possible, providing an additional 3m buffer between them and the edge of the development to be planted with scrub, thorn bearing shrubs and hazel. Where this buffer is not possible, there will be additional planting in a location as close as possible to the relevant boundary;
- Wherever possible, vegetation to be lost will be translocated to the new buffers and / or woodland planting areas to increase the functionality of the existing hedgerows and woodland in advance of development commencing to ensure that they are established as early as possible. However, there is doubt about whether the timings of the project will allow this to be a feasible option;
- New planting will be used to provide replacement habitat. The proposals in this strategy mean that there will be an area of 0.16ha in respect of the road realignment scheme and 0.4905ha planted in respect of the housing development. In total an area of 0.6505ha will be planted;
- Work to remove and translocate trees, scrub and hedgerows will be undertaken at appropriate times of the year in order to avoid killing and injuring dormice. Vegetation will be removed in line with the clearance methodology below;
- Removal and translocation of hedgerows will require a Natural Resources Wales development licence with an accompanying Method Statement in respect of dormice before they can proceed;
- Connectivity over the estate road on the line of the poplar trees will be maintained using shrub and semi-mature tree planting on either side of the road;
- Lighting will be directed away from all boundaries and buffers to reduce disturbance;
- Human access into buffers and Shortlands Wood will be prevented using fencing and thorn bearing shrubs;
- Implementing long term management of all retained, translocated and newly planted areas;

- Implementing a long-term management plan to enhance Shortlands Wood for the benefit of dormice; and
- Monitoring the effectiveness of the mitigation and implementing remedial action where necessary.

Summary of road realignment mitigation measures and planting:

Loss / gain	Area / length
Area of vegetation to be removed	0.08ha
Mitigation planting	0.16ha
Total gain	0.08ha

Summary of residential development mitigation measures and planting:

Loss / gain	Area / length
Area of vegetation to be removed	0.595ha
New hedge planting	90m (assumed 90m ²)
Improvements to existing hedges	390m (assumed 390m ²)
New screen whip planting	0.0425ha
Mitigation planting area (Shortlands Wood)	0.4ha
Shortlands Wood management area	1.7ha
Total planting area (incl. hedges)	0.4905ha
Total gain (incl. woodland enhancement & hedges)	2.1905ha

Combined total habitat loss 0.675ha
 Combined total mitigation 2.3505ha
 Combined total habitat gain 1.6755ha (incl. retained woodland enhancement)

3.4.5 Dormice - impact assessment with mitigation

Construction impact:

With mitigation carried out in advance of construction, it is considered that this can be reduced to a **certain minor term adverse** impact.

Operational impacts:

It is considered that it is not possible to accurately describe the impact of the operational phase of the proposed development on dormice. However, it is considered that the implementation of the proposed mitigation will result in the impacts on dormice being minimised if not negated. It is considered that on balance there will be a **probable short term minor adverse** impact turning into a **long term positive** impact.

3.4.6 Dormice - significance of the impact

Without mitigation:

It is considered that without mitigation the impacts on this species would be of a **very large** significance.

With mitigation:

It is anticipated that with mitigation the significance of any construction and operational impacts on this species would be **slight**.

3.5 DORMOUSE - DETAILED MITIGATION

3.5.1 Habitat removal, retention and new planting

A combination of hedgerow retention, enhancement and buffering and new planting will ensure that functional dormouse habitat is provided on three of the four sides of the development. A wildlife corridor will be provided across the centre of the development. All existing woodland adjacent to the site will be retained and positive conservation land management instigated. This will make maintenance of the Favourable Conservation Status (FCS) of dormice easier compared to both the unmanaged and unbuffered retention of hedgerows within the development and the existing state of hedges on the development site, a large number of which while suitable for dormouse, are not connected or suitable for any purpose other than dispersal.

3.5.2 Retained hedgerows and habitat corridors

All gaps in the retained hedgerows will be planted using native local provenance species. The hedges will also be buffered wherever possible, providing a strip of ≈3m wide between the existing hedge and the new development; however, this is likely to be limited by current design standards and the physical constraints of the land available. Where this is not possible, complementary planting will be undertaken in a location as close as possible. Housing units will preferentially back or side onto hedges and new and retained vegetation with gardens bounded by close boarded fencing. The gapping up and buffers will be used wherever possible to increase the effective width of the hedge and add biodiversity value in excess of that currently available across the development site by planting hazel and other native shrubs as well as thorn bearing plants such as native roses, bramble, hawthorn and blackthorn in order to deter access by humans and also, as far as possible, domestic cats.

All road and path side hedges will be trimmed on their roadside faces only to a minimum of 3m high (winter cut level) no more frequently than every 2 years. Trimming will result in an angled face, encouraging thicker and denser growth at the base of the hedge

Once hedges have reached a minimum height of 3m, they may be laid.

Scrub and screen planting will be coppiced on a rotation to be determined in year 5 after planting based on conditions on site and assumed growth rates from thereon. It is assumed that the rotation will be of between 7 and 12 years. A longer rotation would allow better development but would result in "leggier" plants, thereby potentially allowing access by humans.

From Year 9, with the exception of road and path side hedges, the hedge laying rotation length will be 20 - 25 years, the exact length to be determined in response to on site conditions and growth rates.

3.5.3 Translocated vegetation

All translocated plants will be monitored for failures. All failed plants will be removed and replaced in the first available planting season.

3.5.4 New planting

All planting will be monitored for failures. All failed plants will be removed and replaced in the first available planting season.

The area of woodland planting to the east of Shortlands Wood will be included within the Shortlands Wood management plan. However, the management of the planting for first 5 years following planting will be designed to ensure planting success and managed by the planting contractor. All failures will be replaced as soon as possible / appropriate.

A coppicing regime will be implemented; it is anticipated that this will be in year 7 following planting or once plants have reached a minimum winter height of 3m whichever is earlier.

3.5.5 Clearance methodology

Where hedgerow and scrub clearance is required, it will be supervised by a suitably experienced and licensed ecologist and undertaken in accordance with methods outlined in the *Dormouse Conservation Handbook* (Bright et al, English Nature 2006) to minimise risks to any dormice that might be present.

The work will all be undertaken under the auspices of a Natural Resources Wales development licence and associated Method Statement.

There will be a detailed search of both above ground vegetation and ground layers by the supervising ecologist immediately prior to the above ground clearance to check for animals / nests. In the unlikely event that a dormouse is found, it will be moved to a place of safety (nest box) in the nearest and / or best connected hedge, scrub or woodland vegetation. Should a nest be found, it will be moved to the nearest and / or best connected retained hedge, scrub or woodland vegetation. If it is occupied by dependant young (baby or juvenile dormice), it will be left in situ and works to coppice or clear the hedge will be postponed until such time as it is vacated naturally; NRW will be informed immediately and consulted on as to the best way forward.

As dormice hibernate at or below ground level, all vegetation will be cut to 300 - 500mm above ground level using hand tools (chain saws and brushcutters) between mid November and early - mid March inclusive with all the arisings removed from the work area immediately. All coppicing of hedges in November will be preceded by a hand check for nests by a suitably licensed and experienced ecologist. Any hedges coppiced between December and March will not require a hand check. All coppicing and clearance operations will be supervised by the licensed ecologist. No ground breaking operations will be permitted at this stage.

Ground breaking operations will only be permitted in April (at the earliest) or once temperatures have warmed up sufficiently to allow dormice to come out of hibernation and move away to safe areas.

(This methodology also prevents any conflict with breeding birds as there will be no vegetation for them to breed and reptiles because there will be a fingertip search of nearly bare ground habitat during the reptiles' active season which will prevent reptiles being injured or killed during the process).

3.5.6 Woody vegetation translocation

Translocation of plants involves the excavation of the plants, retaining the maximum amount of root growth and associated soil as possible.

Translocations will take place in two phases in order to prevent harming or disturbing dormice during both the active and hibernation seasons. The initial coppicing of vegetation will take place in the winter (between December and March inclusive), with excavation and replanting only taking place after dormice have become active, usually during April. The coppicing of vegetation during the winter also ensures that there will be no conflict with breeding birds.

It should be noted that year to year differences in weather patterns mean that it may not be possible to translocate vegetation until later in the year.

At Natural Resources Wales' direction, only 100m of any one hedge may be translocated in any one year. However, it is considered that this will not be a factor as each section of hedgerow to be cleared is less than 100m. No more than 500m² of scrub will be cleared in any one day.

As outlined in the clearance methodology above, to avoid killing, injuring or disturbing dormice during their active season, hedges and vegetation will be coppiced in the winter months and excavated during the late spring.

- Roots will extend laterally to obtain water and nutrients and roots and also extend along the line of the hedgerow. Where necessary roots will be cut by, or under the supervision of, the Ecological Clerk of Works during the lifting operations to minimise damage to plants;
- To compensate for the inevitable loss of roots the donor site vegetation will be cut back to between 0.3 - 0.5m above ground level prior to removal. This coppicing will make the vegetation easier to lift and handle. It is anticipated that although the 'instant' vegetation effect will not be possible, the chances of successful translocation of the plants are greatly increased and the time taken for reestablishment will be significantly quicker than establishing new planting, with re-growth from the base of the plants anticipated to reach the original height within 3 years of translocation;
- The vegetation will be removed and transported to the new location (receptor site) using appropriately sized machinery with appropriate buckets fitted. Each section will be translocated to its new location immediately upon lifting. This will avoid roots, particularly fibrous roots, becoming desiccated;

- The receptor site will have been prepared prior to the commencement of the ground breaking exercise. This will comprise a trench and / or holes mirroring the donor site's excavation depth. The base of the excavations will be broken up to allow for free drainage and the quicker establishment of new roots;
- Loose topsoil will be placed around the plant roots as they are positioned into the trenches / holes;
- Firming-in of the plants will be undertaken to ensure that air pockets do not exist around the roots that could prevent nutrient and water uptake and prevent root damage as a result of exposure;
- Immediately following the translocation, the vegetation will be watered-in. This will assist in soil settlement around the roots;
- All operations will be undertaken under the guidance of suitably experienced ecological clerk of works (who must hold a dormouse licence or be an accredited agent of a licence holder);
- For a minimum of two years following the translocation the vegetation will be watered during periods of excessive dry weather and any gaps will be in-filled with sapling hedgerow trees and shrubs (hazel, blackthorn, hawthorn);
- Any and all lighting will be directed away from hedgerows, woodland and scrub areas, and in particular the habitat corridors to reduce light pollution and disturbance to dormice;
- Protective fencing will be required to prevent any possibility of damage to new planting from construction related activities until the hedge is fully established. This will comprise post and stocknet fencing (where close boarded / feather edged garden fencing is not proposed for plot boundaries) which will be constructed on the outside edge of ecological buffer strips. This will be installed immediately after translocation and planting;
- Retained hedgerows and their buffers will be fenced in a similar fashion;
- Management of retained, translocated and newly planted hedgerows and other vegetation will be sympathetic to dormice i.e. there will be no intensive flailing of hedges or aggressive scrub and woodland management wherever this does not conflict with other regulatory requirements (e.g. highways). The management will be in accordance with the recommendations contained in *Hedgerows a guide to wildlife and management* (PTES), *Managing Small Woodlands for Dormice* (PTES) and *Hedgerow management, dormice and biodiversity* (English Nature, Report 454, 2002); and
- Oscillating blade cutters will be used in preference to hammer flails wherever possible.

3.5.7 Hedgerow and wildlife planting

The species chosen will reflect the woody species diversity currently found on the site in the species rich and important hedges. Therefore, there will be a species list comprising the following:

- Hawthorn;
- Blackthorn;
- Holly;
- Field Maple;
- Dogwood;
- Wild privet;
- Honeysuckle; and
- Hazel.

Other species will be allowed to regenerate naturally.

NOTE: ash will not be planted due to the risk of spreading ash die-back disease. Oak trees will be planted as heavy standards next to retained, translocated and new planted hedges and in buffer strips.

3.5.8 Habitat connectivity

Currently, the site is well connected to other suitable dormouse habitat via dense, bushy hedgerows. These will be retained, thereby maintaining connectivity. Gaps in the existing hedges will be planted up and the hedges buffered wherever possible thereby enhancing the overall habitat and connectivity.

Where there are breaks in a hedgerow, they will be infilled using native shrub and tree species typical of the hedge to ensure a continuous canopy over the break. This planting will take place at the same time as all other ecological and landscape planting.

Shorter gaps ($\leq 5\text{m}$) over footpaths and cycleways will be crossed using a simple rope bridge formed by a wooden pole at either end with four loosely twined natural fibre ropes between them. The poles will be stayed with natural fibre ropes. Again, Advanced Nursery Standard or Extra Heavy Standard trees will be used to provide canopy cover; if this is not possible, plants will be allowed to develop into hedgerow trees to provide that cover. Additional planting of climbing species will also be used at the base of the poles which will also have coils of natural fibre rope around them.

3.5.9 Lighting

The lighting design will ensure that there will be no lighting of any hedge, buffer or habitat corridor unless it is an absolute requirement (due to safety concerns and / or design standards). The designs will be finalised by the lighting teams at the Vale of Glamorgan Council and Edenstone Homes.

Lights in the vicinity of vegetation likely to be used by dormice and road crossings will be positioned, directed appropriately and provided with baffles and / or shields to prevent light spill onto vegetation and up into the sky.

Light levels will be monitored and adjusted as necessary to benefit dormice and other protected species.

3.6 MONITORING

Dormouse nest boxes will be put out (1no. every 50m) along the site boundaries as soon as the vegetation can provide cover and shelter from observation and vandalism (assumed to be within 3 years for translocated vegetation and 5 years for new planting. This assumption will be subject to confirmation dependant on site circumstances and growth rates which will be monitored by the supervising ecologist (advice from the landscape designer / contractor will be sought as necessary); the stated periods are therefore open to change and may be made shorter or longer as necessary.

Dormouse boxes will also be placed in Shortlands Wood in accordance with the requirements of the National Dormouse Monitoring Programme (at ≈50m intervals).

All boxes will be monitored twice per year (once in each of May and September) every year for 10 years after last occupancy of the completed development. If dormouse boxes cannot be installed, dormouse tubes will be utilised and monitored in the same way at the same intervals. (The 10 year monitoring period may be reduced in consultation with Natural Resources Wales based on the results of monitoring demonstrable use by dormice).

Any remedial action required (for hedge growth rates, quality and to ensure dormouse use) will be implemented in the first appropriate season following the discovery for its need. The action taken will revolve around providing replacement plants for those which fail to take following hedge translocation and / or new planting.

3.7 GREAT CRESTED NEWT

3.7.1 Summary

There are no records of this species from the site. There is no suitable breeding habitat (ponds or other water bodies) on the site; there is suitable terrestrial habitat present.

There are records of this species from within 500m, the closest being 254m to the west, indicating that animals are likely to use the site during the terrestrial phase of their life cycle.

There are anecdotal records of great crested newts in ponds in the rear gardens of houses on Cross Common Road within 50m of the site's north eastern boundary (pers. comm. Erica Dixon (VoG Ecologist)).

3.7.2 Legislation

Great crested newts, any place used for shelter or protection, or a breeding site or resting place are fully protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Species and Habitats Regulations 2010 (as amended). The places of shelter are protected whether or not the animals are present.

Where a European protected species such as great crested newt is present, a development may only proceed, under a licence issued by Natural Resources Wales who is the appropriate authority responsible for issuing licences under the above Regulations

3.8 GREAT CRESTED NEWT – EVALUATION, IMPACT CHARACTERISATION AND ASSESSMENT

3.8.1 Great crested newt – evaluation

Great crested newts are protected under European legislation and are therefore of **high international** ecological importance.

There are no breeding sites for this species within the development site boundaries. There are current and historic records of this species in a pond in the playing field area to the west of Cardiff Road. Records of great crested newts in garden ponds of houses along Cross Common Road to the east of the development site were made to the planning authority's ecologist shortly after the development proposals were made public.

It is considered that:

- surveys of the pond to the west will not provide any up to date information relevant to the site given that not all the newts using this breeding site will utilise the proposed development site during their terrestrial life cycle phase. Therefore, surveys could provide a skewed population figure, especially as the majority of great crested newts are likely to remain within 50m of the breeding pond.

- in addition, Cardiff Road and the Cadoxton River are likely to present impediments (albeit not impassable barriers) to successful dispersal.
- access to the ponds in gardens along Cross Common Road is not possible meaning that confirmation of presence of great crested newts in these ponds is not possible (by any means). Therefore, an accurate population assessment (for the purposes of licensing) is not possible. Again, as great crested newts remain within 50m of the breeding site, this means that any assessment of the site in relation to any great crested newt presence in these ponds (and therefore also mitigation) may be incorrect.
- the site is waterlogged during the winter months and is therefore generally unsuitable for hibernating amphibians (and reptiles).
- it may be possible to identify the presence of great crested newts on the development site through the use of refugia during the summer months. However, the accuracy of this methodology, other than for determining presence, is debateable.

In the light of these considerations, it is thought that it would be more efficient and cost effective to clear the site in accordance with a method statement and under ecological supervision which allows for the early identification of any relevant amphibian (or reptile) species, the design of mitigation appropriate to the numbers of animals found and their life stage and the implementation of any relevant actions e.g. EPS development licence applications.

3.8.2 Great crested newt – impact characterisation

It is not possible to ascertain with any reasonable level of confidence whether great crested newts are present on the development site. Therefore, the only way to determine whether or not they are using the site is to undertake site clearance in such a way as to be able to identify them before an offence is committed and take appropriate action, including if necessary the redesign of elements of the proposed new road construction and housing development.

If great crested newts were to be found on the site during the site clearance, it is considered that there would be a loss of terrestrial habitat. This would result in a **certain permanent adverse** impact. The significance of the impact could only be determined by the numbers found.

If they are not present on the site during clearance, it is considered that there will be no impacts on this species.

3.8.3 Great crested newt - impact assessment without mitigation

It is not possible at this stage to classify any impacts (positive or adverse) until more is known about the location of the animals, how they are likely to be using the site and in what numbers.

It is considered that there will be **no adverse** impacts on this species as a result of the proposed development if great crested newts are not found.

3.8.4 Great crested newt – mitigation measures

The requirement for mitigation cannot be determined without identifying the presence of the species on the site. However, it is considered advantageous and in compliance with best practice to implement precautionary measures which will prevent harm to this species. These measures are likely to include (but not be limited to) the following:

- Retention of as much of the existing habitat as possible through design;
- The use of "newt friendly" drainage systems e.g. wildlife kerbs around gulleys and road gulley pots and surface water drains without sumps;
- Designing the proposed attenuation basin as a single stage surface water treatment system which will act as an ephemeral pond;
- The basin will be planted as marshy grassland;
- The pond will be surrounded by shrub habitats which will provide any amphibians and reptiles which start using it with cover, hibernation sites and terrestrial foraging habitat;
- Wherever possible, retention of a terrestrial habitat buffer approximately 3m wide alongside the site boundaries to establish a no development and construction no go area along those boundaries;
- Managing the site boundaries as dispersal corridors to benefit great crested newts;
- Conducting site clearance by maintaining a level of grazing on the site which prevents vegetation becoming suitable hibernation habitat and of a lower suitability for use by newts in their terrestrial phase;
- Clearing the site during the winter when the soils are waterlogged and great crested newts are not likely to be present;
- Should a great crested newt or newts be seen at any time during the construction process, relevant works will cease until Natural Resources Wales have been consulted and an appropriate way forward has been agreed e.g. a development licence and mitigation.

3.8.5 Great crested newt - impact assessment with mitigation

If great crested newts are not likely to be present on the site, it is considered that there will be a **neutral** impact on this species as a result of the proposed development.

It is not possible to determine a likely impact if great crested newts are present as the status of the population is not known.

3.8.6 Great crested newt - significance of the impact

Without mitigation

If great crested newts are not present, it is considered that the significance of the impact of the development would be **neutral**.

If great crested newts are present, the impact remains to be determined.

With mitigation

It is considered that the impact of the development will be of a **neutral** significance if great crested newts are not present.

If great crested newts are present, the impact remains to be determined.

3.9 MONITORING & MAINTENANCE

An annual condition assessment of the pond will be included in the monitoring and appropriate remedial / management actions applied e.g. desilting if necessary.

It is recommended that a condition assessment of the pond continues after this period with a check being made no less frequently than once every two years. This could be organised by either the Vale of Glamorgan Council or a suitably experienced voluntary group, dependant on who has responsibility for ongoing management.

4 OTTER

4.1 SUMMARY

No evidence of otters was found during any of the visits to the site.

Despite the lack of evidence, otter presence should be assumed on all rivers and larger watercourses.

4.2 OTTER ECOLOGY

Otters (*Lutra lutra*) are one of Great Britain's largest land mammals. Territories must therefore be large provide enough foraging and shelter, both for everyday use and breeding. Territories may comprise up to forty kilometres of waterway including rivers, streams, ditches, wetlands, lakes, ponds and reservoirs, which the otter will defend. Although mainly nocturnal, otters will emerge during daylight to patrol their territories and hunt. Prey is comprised mainly of fish; however, they will take anything they can catch without risk to themselves, particularly amphibians and birds.

There are usually a number of places of shelter (holts) along territories. These are supplemented by the use of lying up sites which are used in addition to the main holts. Holts can take many forms: holes in banks, cavities in the root systems of riparian trees, under fallen timber, areas of dense scrub, and even areas of long grass. Breeding holts tend to be located away from rivers and potential disturbance. Otters can breed at any time of the year; the kits remain with the bitch for up to a year.

Otters have been recorded regularly on watercourses throughout south Wales.

4.3 LEGISLATION

Otters, any place used for shelter or protection, or a breeding site or resting place are fully protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. Their places of shelter are protected whether or not the animals are present.

Where a European protected species such as otter is present, a development may only proceed, under a licence issued by the Natural Resources Wales (NRW) who is the appropriate authority responsible for issuing licences under Section 44 of the above Regulations.

4.3.1 Habitat assessment

The Cadoxton River provides suitable habitat for this species. However, the vegetation on the banks of the stream is small and intensively managed as it is within the visibility splay area for the junction of Cross Common Road and Cardiff Road. Therefore, the chance of an otter using this habitat is likely to be very low.

There are a number of potential lying up locations elsewhere along the river in proximity to the site as there is dense vegetation and scrub on the banks which could offer resting sites for otters.

No optimal breeding holt habitat was observed.

The management of the development site limits suitable habitat for this species to the boundaries and Shortlands Wood.

4.3.2 Field survey

A separate specific otter survey was not carried out, as the records search confirmed the presence of otter within the search area; therefore, otter presence in the Cadoxton River will be assumed.

No evidence of otter was recorded from the development site during any pre-commencement surveys and site visits.

Otter spraint and footprints were observed under the bridge carrying Cardiff Road over the Cadoxton River during a check made while undertaking ecological supervision of the site clearance for the road realignment project (November 2016).

4.4 OTTER - EVALUATION, IMPACT CHARACTERISATION AND ASSESSMENT

4.4.1 Otter - evaluation

Otters are protected by international and domestic legislation, a reflection of their general rarity and are therefore of **high international** value.

The Cadoxton River runs directly adjacent to the site and is likely to be utilised by otters at varying levels of intensity. The bankside habitat is suitable for lying up but is unlikely to be suitable for holts as it is a narrow corridor and therefore very accessible by other otters, it is lit and in close proximity to busy urban areas. This, in combination with the management currently applied to the river banks next to the existing bridges (close cutting back of vegetation), the proximity of housing, Cross Common Road and Cardiff Road means that a survey of the Cadoxton River is unlikely to identify any positive signs of otters; besides which the presence of signs alone without the presence of a place of shelter is unlikely to indicate that an offence would be committed as a result of works to install the access road and new bridge / box culvert. Use of other areas of the development site by otters is possible although unlikely with a resultant low likelihood of turning up positive evidence.

Although it is not connected to the river directly, it is possible that the pond in the sports ground to the west of the site may also be used for foraging and lying up.

However, given the lack of otter sign, paucity of records and more suitable habitat further afield, it is considered that the development site is of **low** value for this species.

4.4.2 Otter - impact characterisation

It is considered unlikely that there will be any direct impacts to otters, their breeding places or places of shelter; however, works to facilitate the proposed new footbridge bridge across the Cadoxton River from Cardiff Road may have an adverse impact on

otter dispersal as a result of clearance and disturbance during the construction phase.

It is also possible that there may be direct and / or indirect impacts on otters as a result of pollution incidents affecting the river.

4.4.3 Otter - impact assessment without mitigation

It is considered that there will be an **extremely unlikely minor short term adverse** impact on otters as a result of localised disturbance during the clearance and construction periods and an **extremely unlikely minor short term adverse** impact as a result of the operational phase of the development.

4.4.4 Otter - mitigation measures

No specific mitigation will be required; however, the following measures should be implemented in order to minimise disturbance:

- There will be no lighting of the Cadoxton River channel and bankside vegetation. Should lighting be required for a site access onto Cardiff Road, it will be baffled to prevent light spill into the channel and away from bankside vegetation to minimise disturbance as a result of light;
- All retained scrub, hedge and woodland habitats will remain unlit;
- There will be no night working;
- Any excavations will be covered overnight or where this is not possible, a means of escape will be provided;
- An appropriately experienced ecologist will be “on call” for the duration of the project in the unlikely event that an otter or otters are found on site, in which case the relevant work will cease immediately and Natural Resources Wales will be consulted. A development licence may be required prior to any further work being carried out. No further work will be undertaken without the approval of NRW; and
- All materials will be stored within a secure otter proof fenced compound.

4.4.5 Otter - impact assessment with mitigation

It is considered that there will be a **neutral** impact on this species as a result of the proposed development.

4.4.6 Otter - significance of the impact

Without mitigation:

It is anticipated that the significance of the impact is **slight**.

With mitigation:

It is anticipated that the significance of the impact is **neutral**.

4.5 OTTER - DETAILED MITIGATION

4.5.1 Lighting

Lights in the vicinity of the river will be provided with baffles and / or shields to prevent light spill into the channel and onto the riverbanks and associated vegetation. Where lighting is required for safety reasons, there is a preference for it to be initiated by movement activated sensors and turned off after a suitable delay (thereby ensuring that pedestrians / path users are in light all the time they are using the path but so that the path returns to darkness when no one passes).

4.6 MONITORING

The river corridor will be checked twice annually (May and August) for the presence of otters every year during the various construction phases of the developments.

5 BREEDING BIRDS

5.1 SUMMARY

A number of species of bird have been recorded near the site.

It should be assumed that breeding birds will utilise the unmanaged hedgerows/scrub and woodland habitat on and immediately adjacent to the site.

5.2 BIRD ECOLOGY

Birds are an extremely diverse class of warm blooded animals which vary in size from the goldcrest (*Regulus regulus*) at 9cm to the wandering albatross (*Diomedea exulans*) at 107 – 135cm.

Birds however, not only vary in their size, but in their colour, lifestyle and diet. The diets vary from herbivores to carnivores which include predatory, insectivorous and omnivorous species.

In Britain, the most common birds are the passerines (songbirds), which contain over half of all bird species. Other bird groups in the UK include sea birds, waders, waterfowl, game birds, corvids (crow family) and the raptors.

A total of 435 bird species have been recorded within Wales of which approximately 150 species also breed in Wales.

Birds are egg layers, and in Britain they generally breed between March and August. Breeding all year round is possible if winters are relatively mild. Some bird species will produce only clutch of eggs per year while others will double and even triple their broods if their food source is plentiful, or if they have been susceptible to predation or disturbance.

Eggs are laid in nests which vary from woven structures to a few simple twigs which can be on the ground or raised up in trees and shrubs. The chicks are raised by either one or both parent (occasionally neither as in the cuckoo (*Cuculus canorus*)). When mature enough, they will fledge (leave the nest and become independent). Chicks are usually raised on the same diet as the adult, with food brought back to the nest by the parent(s).

Birds in Britain do not hibernate as many mammals do, but some will migrate to warmer climes for the lean period before returning in the spring to breed.

5.3 LEGISLATION

In Britain, all naturally occurring species are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended). The legislation protects all birds, their nests and eggs, and it is an offence to:

- Intentionally kill, injure or take a wild bird;
- Intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built; and
- Intentionally take or destroy the egg of any wild bird.

In addition, birds listed on Schedule 1 of the above legislation, such as the red kite (*Milvus milvus*), are afforded further protection, and it is an offence to:

- Intentionally or recklessly disturb the bird whilst nest building or while at (or near) a nest with eggs or young; and
- Disturb the dependant young of such a bird.

Some birds however are exempt from this protection for certain purposes.

5.4 BREEDING BIRDS - EVALUATION, IMPACT CHARACTERISATION AND ASSESSMENT

5.4.1 Birds - evaluation

Due to the legislative protection afforded to them, breeding birds are considered be of **medium – high national** importance.

There is suitable habitat for birds to utilise for breeding in unmanaged/hedgerows/scrub boundaries and adjacent woodland. It is unlikely that ground nesting species will utilise the site due to the close proximity of scrub, trees and woodland which act as predator perches. Additionally, the grazing of the site does not allow a sward of sufficient height to develop which might provide any cover, shelter or foraging habitat.

Within the context of the site, it is considered that breeding birds are of **medium local** importance as the species recorded nearby and likely to use the site are considered to be representative of the range and extent of the habitats available.

5.4.2 Birds - impact characterisation

The impacts are likely to be primarily associated with the removal and reduction of the number of opportunities available to breeding birds in terms of nesting area, cover / shelter and foraging.

If vegetation removal was to be undertaken during the breeding season, there is the potential for birds to be disturbed killed or injured and / or their nests to be disturbed, damaged or destroyed.

5.4.3 Birds - impact assessment without mitigation

It is considered that there will be a **certain moderate short term adverse** impact on this species as a result of the loss of potential breeding (nesting) and foraging habitat and a **probable short term minor adverse** impact should birds be killed, injured or disturbed during vegetation clearance works.

5.4.4 Birds - mitigation measures

It is recommended that the following mitigation measures are implemented:

- Site clearance (vegetation removal) will only be undertaken outwith the breeding bird season (i.e. only between October and March inclusive). Where this is not possible, clearance may only take place following an

ecological assessment and approval and only in areas where no breeding birds are present. Where breeding birds are present, no clearance will be allowed within 20m of the nest site);

- Habitat enhancement of any retained boundaries to increase the floral diversity will increase the range of invertebrates; both measures would increase the amount of foraging habitat available to bird species; and
- The post-development landscaping plan should aim to increase biodiversity levels.

5.4.5 Birds - impact assessment with mitigation

It is considered that there will be a certain minor short term adverse impact on this group as a result of the loss of nesting and foraging habitat and a neutral impact as a result of vegetation clearance.

5.4.6 Birds - significance of the impact

Without mitigation:

It is considered that the impact would be of a **slight** significance.

With mitigation:

It is considered that the impact will be of a **neutral** significance.

5.5 BREEDING BIRDS - DETAILED MITIGATION

Please refer to section 5.4.4 above.

5.6 MONITORING & MAINTENANCE

Not required.

6 REPTILES

6.1 SUMMARY

No reptiles were recorded from the site as part of the biological records search; however, reptiles (slow worm) were recorded within 2.5km of the site.

No reptile survey has been carried out to date as it was assumed that the four common species of reptile, particularly slow worm, common lizard and grass snake, could find suitable habitat, certain aspects of the site indicates that the site is potentially of some value to reptile species.

The habitat assessment looked for features which would be attractive to reptiles such as:

- South facing banks;
- Varied profile ground form;
- Basking areas;
- Vegetation cover;
- Structurally diverse vegetation;
- Potential hibernation sites;
- Evidence of suitable prey sources;

6.2 REPTILE ECOLOGY

Reptiles are cold blooded, meaning they have to rely on external heat sources to warm their blood sufficiently to allow foraging and other activity. During the winter they are in hibernation, emerging in April (or when the temperatures are consistently warm enough) mating takes place shortly after once the animals have fed enough to start putting weight back on after the winter. Eggs are laid in the summer, and left to develop and hatch on their own. Brumation (hibernation) starts again as temperatures fall again in the autumn.

The four common species of reptile in the UK (adder (*Vipera berus*), grass snake (*Natrix natrix*) slow worm (*Anguis fragilis*) and common lizard (*Lacerta vivipara*) have different preferences for habitat and diet. Adders generally prey on small mammals in drier habitats, grass snakes on amphibians in wetter areas and aquatic habitats while slow worms and common lizards take smaller invertebrates in dry areas.

6.3 LEGISLATION

The four common species listed above are protected by the Wildlife and Countryside Act 1981 (as amended) against killing, injury and sale.

Smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*) are not found in this area, having very specific geographical distribution within Britain, and so will not be referred to in this report despite the higher legislative protection afforded to them.

6.4 SUMMARY OF RESULTS

The boundaries to the fields all provide suitable reptile habitat, with abundant opportunities for basking, foraging, shelter and hibernation, particularly for slow worm common lizard and grass snake. The ranker grass and scrub in Field 3 provides in field habitat whereas the grazing of fields 1 and 2 does not allow the sward to develop into one which reptiles could exploit without opening themselves up to predation.

However, Fields 1 and 3 next to Cardiff Road are low lying and were very wet at the time of the site visit as the land to the east is higher and drains down onto them and then onto the roadside ditch and the Cadoxton River. This reduces the potential of these fields being used by slow worms and common lizards but does perhaps provide opportunities for grass snakes. The potential for these fields to be used for hibernation habitat is also significantly reduced due to them being waterlogged and / or flooded quickly.

6.5 REPTILES - EVALUATION, IMPACT CHARACTERISATION AND ASSESSMENT

6.5.1 Reptiles - evaluation

Reptiles are protected by UK legislation and therefore they are of **medium to high national** ecological importance.

Overall the site appears to be of **low** value to reptiles due to the intensity of the grazing applied to the site, the heavy clay soils and resulting likely frequent waterlogging. The exceptions within these areas are the boundary features and areas of rougher / ranker grassland which are considered to be of **low - medium local** value for reptiles.

It should be assumed that reptiles will be present but probably at low densities. It is considered that reptiles are of **low - medium local** ecological importance.

6.5.2 Reptiles - impact characterisation

It is likely that any impact on reptiles will be as a result of site clearance operations and earthworks when they are at risk of being injured or killed. There may be impacts into the operational phase of the development as a result of the increase in disturbance from people and predation by domestic pets (cats).

6.5.3 Reptiles - impact assessment without mitigation

It is considered that there will be a **certain moderate short term local adverse** impact on reptiles as a result of site clearance and the construction phase of the development.

6.5.4 Reptiles - mitigation measures

It is considered that neither a full survey nor a translocation exercise is necessary. It is recommended that the following measures be implemented:

- Vegetation will be retained wherever possible. Site clearance will be minimised wherever possible; the retention of a 3m buffer wherever possible between the existing boundaries and the edge of the development will provide foraging habitat for all the species of reptile likely to be found on the site;
- Site clearance will be undertaken during the winter when the soils are more likely to be waterlogged and reptiles not present. This will also avoid the reptile active season thereby reducing the chances of animals being killed and injured;
- Trees, scrub and vegetation will be cut to ground level using hand tools or low ground pressure machinery and the stumps left in situ so as to avoid disturbing animals in hibernation i.e. root balls/stumps will be left in situ until reptile active season. Routes to access, fell trees and clear timber and brash will be designated by the supervising ecologist to minimise disturbance of potential hibernation features;
- There will be no ground breaking within 5m of site boundaries, scrub areas and rank grassland between November and March inclusive so as to avoid disturbing animals in hibernation;
- Clearance will be conducted in accordance with a Method Statement (Appendix C) under the supervision of a suitably experienced ecologist to ensure that should reptiles and / or amphibians be found during the course of site clearance or any other development activity, they will not be harmed and can be adequately cared for and released to a suitable area at a suitable time of year; and
- Post development landscaping will provide two hibernacula (excavated pit infilled with logs and rubble, topped with brash and covered over with the soil arisings and turf) as described in Appendix D; the supervising ecologist will advise on the exact location on site at the time of creation. The best locations would be on slightly higher ground to the east of the development.

6.5.5 Reptiles - impact assessment with mitigation

It is considered that there will be a **probable minor short term adverse** impact on reptiles during the construction phase and a **probable minor medium term** impact on reptiles during the operational phase of the development.

6.5.6 Reptiles - significance of the impact

Without mitigation:

It is anticipated that the significance of the impact is **moderate**.

With mitigation:

It is anticipated that the significance of the impact is **neutral**.

6.6 MONITORING & MAINTENANCE

Monitoring of cleared areas is only required if reptiles are identified by the ecologist during the clearance operation. A methodology for this will be developed, and agreed with the LPA ecologist, should it be necessary.

7 GENERAL MITIGATION / CONSIDERATIONS

It is considered that other enhancement features are implemented to provide additional benefits for biodiversity:

1. All close boarded fences or fences fitted with toe boards on the housing development site will have a 100 x 100mm gap at 10m intervals between the bottom of the fence and the ground to allow passage at ground level for hedgehogs and other small mammals;
2. Include the mitigation outlined above (and summarised in section 8 below) within the post-development landscape plan to ensure that all the mitigation is delivered.

8 MITIGATION SUMMARY

Ecological feature	Outline mitigation
Statutory sites	<ul style="list-style-type: none"> • Not required
Non-statutory sites	<ul style="list-style-type: none"> • <u>Not required</u>
Bats	<ul style="list-style-type: none"> • All trees containing confirmed bat roosts will be retained; • Any and all lighting will be directed away from hedges, trees and landscaping and / or baffled to remove / minimise impacts on flight lines and reduce overall light spill; • Lighting will be minimised and be of type which causes least impact on bats wherever possible; • All vegetation and tree clearance will be minimised to retain as much of the existing habitat as possible; • Trees not containing bat roosts will be felled during the winter months to reduce the chances that bats will be present at the time of felling; • Bat boxes will be erected on suitable buildings within the proposed development and on trees or poles around the perimeter of the site to provide suitable roosting opportunities; • All trees scheduled for felling and / or pruning operations will be reassessed for their potential to provide roosting features for bats prior to the work commencing; and • A licensed bat ecologist will be “on call” for the duration of the project in the event that bats are discovered or suspected of being present, in which case the work will cease immediately, Natural Resources Wales will be contacted. A development licence may be required prior to any further work being carried out. No further work will be undertaken without the approval of NRW.
Dormouse	<ul style="list-style-type: none"> • With the exception of the losses detailed above, retaining hedges in situ and planting up gaps and wherever possible providing an additional 3m buffer between them and the edge of the development to be planted with scrub, thorn bearing shrubs and hazel; • Wherever possible, vegetation to be lost will be translocated to the new buffer and woodland planting areas to increase the functionality of the existing hedgerows and woodland in advance of development commencing to ensure that they are established as early as possible. However, there is doubt about whether the timings of the project will allow this to be a feasible option; • New planting will be used to provide replacement habitat. The proposals in this strategy mean that there will be an area of 1.6755ha planted to benefit dormice; • Work to remove and translocate trees, scrub and hedgerows will be undertaken at appropriate times of the year in order to avoid killing and injuring dormice. Vegetation will be removed

Ecological feature	Outline mitigation
	<p>in line with the clearance methodology below;</p> <ul style="list-style-type: none"> • Removal and translocation of hedgerows will require a Natural Resources Wales development licence with an accompanying Method Statement in respect of dormice before they can proceed; • Connectivity over the estate road on the line of the poplar trees will be maintained using shrub and semi-mature tree planting on either side of the road; • Lighting will be directed away from all boundaries and buffers to reduce disturbance; • Human access into buffers and Shortlands Wood will be prevented using fencing and thorn bearing shrubs; • Implementing long term management of all retained, translocated and newly planted habitat; • Implementing a long term management plan for Shortlands Wood; and • Monitoring the effectiveness of the mitigation and implementing remedial action where necessary.
Otter	<ul style="list-style-type: none"> • There will be no lighting of the Cadoxton River channel and bankside vegetation. Should lighting be required for a site access onto Cardiff Road, it will be baffled to prevent light spill into the channel and away from bankside vegetation to minimise disturbance as a result of light; • All retained scrub, hedge and woodland habitats will remain unlit; • There will be no night working; • Any excavations will be covered overnight or where this is not possible, a means of escape will be provided; • An appropriately experienced ecologist will be “on call” for the duration of the project in the unlikely event that an otter or otters are found on site, in which case the relevant work will cease immediately and Natural Resources Wales will be consulted. A development licence may be required prior to any further work being carried out. No further work will be undertaken without the approval of NRW; and • All materials will be stored within a secure otter proof fenced compound.
Breeding birds	<ul style="list-style-type: none"> • Site clearance (vegetation removal) will only be undertaken outwith the breeding bird season (i.e. only between October and March inclusive). Where this is not possible, clearance may only take place following an ecological assessment and approval and only in areas where no breeding birds are present. Where breeding birds are present, no clearance will be allowed within 20m of the nest site); • Habitat enhancement of any retained boundaries to increase the floral diversity will increase the range of invertebrates; both measures would increase the amount of foraging habitat available to bird species; and • The post-development landscaping plan should aim to increase

Ecological feature	Outline mitigation
	biodiversity levels.
Reptiles	<ul style="list-style-type: none"> • Vegetation will be retained wherever possible. Site clearance will be minimised wherever possible; the retention of a 3m buffer wherever possible between the existing boundaries and the edge of the development will provide foraging habitat for all the species of reptile likely to be found on the site; • Site clearance will be undertaken during the winter when the soils are more likely to be waterlogged and reptiles not present. This will also avoid the reptile active season thereby reducing the chances of animals being killed and injured; • Trees, scrub and vegetation will be cut to ground level using hand tools or low ground pressure machinery and the stumps left in situ so as to avoid disturbing animals in hibernation i.e. root balls/stumps will be left in situ until reptile active season. Routes to access, fell trees and clear timber and brash will be designated by the supervising ecologist to minimise disturbance of potential hibernation features; • There will be no ground breaking within 5m of site boundaries, scrub areas and rank grassland between November and March inclusive so as to avoid disturbing animals in hibernation; • Clearance will be conducted in accordance with a Method Statement (Appendix C) under the supervision of a suitably experienced ecologist to ensure that should reptiles and / or amphibians be found during the course of site clearance or any other development activity, they will not be harmed and can be adequately cared for and released to a suitable area at a suitable time of year; and • Post development landscaping will provide two hibernacula (excavated pits infilled with logs and rubble, topped with brash and covered over with the soil arisings and turf) as described in Appendix D; the supervising ecologist will advise on the exact location on site at the time of creation. The best locations would be on slightly higher ground to the east of the development.
Woodland	<ul style="list-style-type: none"> • Implement a 25 year management plan to benefit dormouse (and other species)
Scattered trees	<ul style="list-style-type: none"> • As per bats above; • Allow for the planting of native species trees of as local a provenance as possible
Continuous and scattered scrub	<ul style="list-style-type: none"> • Minimise removal wherever possible; • As per dormouse mitigation above

9 CONCLUSION

Overall, the site is considered to be of low ecological value.

Further bat surveys were undertaken confirming 2 trees as bat roosts. These trees will be retained *in situ*.

There are no records of dormice within the 2.5km search buffer of the site. However, the site has good connectivity to the wider landscape and contains mature fruiting hazel along its boundaries. Providing the majority of existing boundaries are retained and efforts are focussed on maintaining connectivity where breaks in hedgerows are needed, no further dormice surveys will be required.

There is no suitable breeding habitat for great crested newts within the site boundaries; however, there are records (confirmed and anecdotal) of breeding populations within 250m of the site. The site has the potential to offer great crested newts terrestrial habitat at certain times of the year. Further surveys are thought unlikely to provide sufficient information to inform a licence application. Therefore, it is proposed to clear the site in accordance with a method statement and seek a licence should it be required.

Otters may use the site as a temporary lying up site/foraging site due to proximity of the Cadoxton River, but are unlikely to be impacted on by proposed works. No further surveys are required, however, works will cease and a licence will be obtained (if necessary) should evidence of this species be found on the development site.

Nesting birds are likely to be using the scrub, hedgerows and trees, so vegetation clearance should take place outside of the breeding bird season.

The site has a range of habitats that are broadly suitable for the commonly occurring reptile species and therefore reptile presence must be assumed.

A Natural Resources Wales development licence may be needed if a European protected species is identified on the site or is likely to be impacted in either construction activities or the operational phase (e.g. bats, great crested newt, otter).

Wherever possible, vegetation clearance will be minimised with that not cleared being retained and enhanced for nature conservation purposes.

10 REFERENCES

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APPENDIX A - PHASE 1 HABITAT SURVEY MAP



APPENDIX B - MITIGATION STRATEGY OVERVIEW PLAN

MITIGATION STRATEGY OVERVIEW PLAN
(Not to scale)

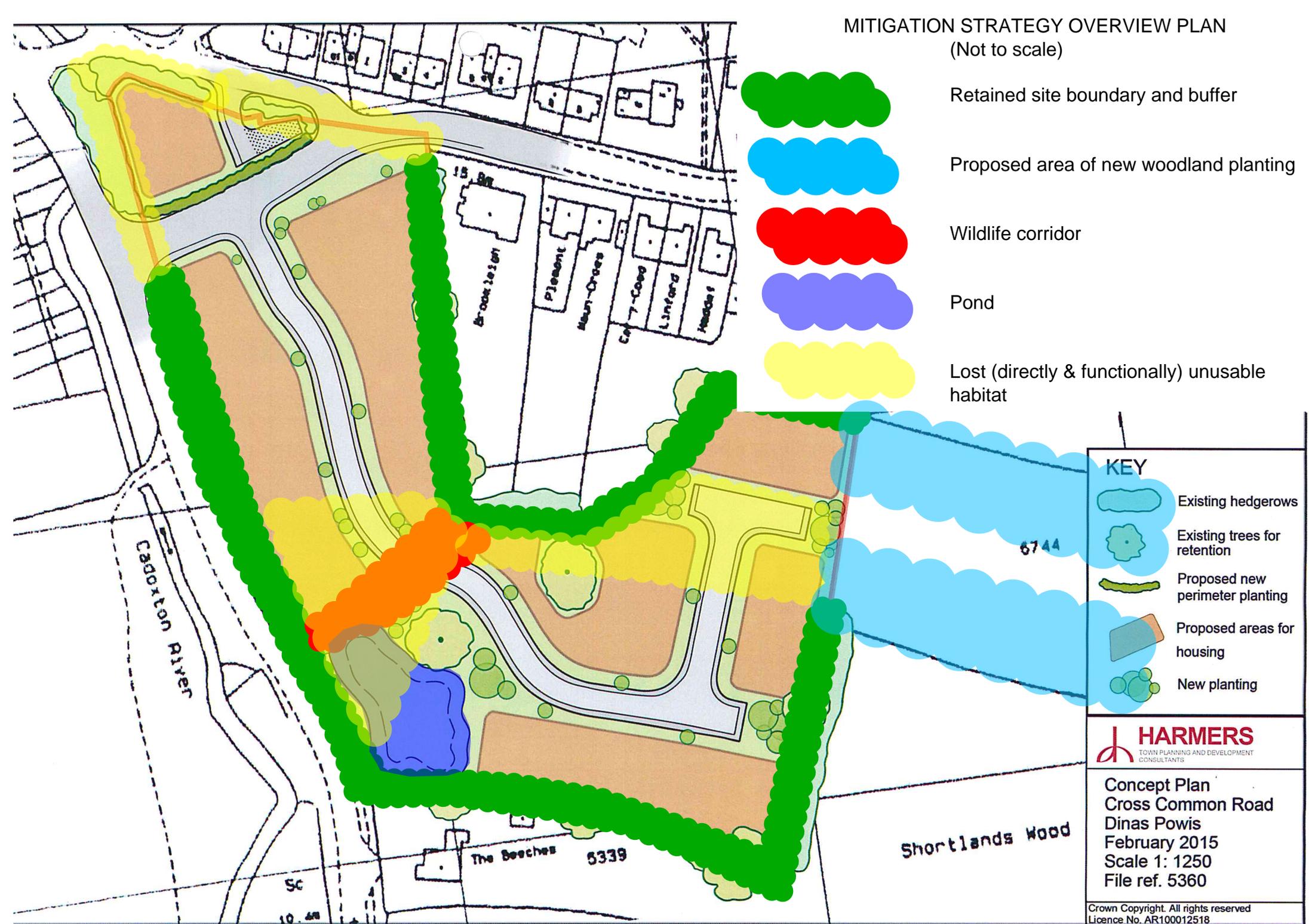
-  Retained site boundary and buffer
-  Proposed area of new woodland planting
-  Wildlife corridor
-  Pond
-  Lost (directly & functionally) unusable habitat

KEY

-  Existing hedgerows
-  Existing trees for retention
-  Proposed new perimeter planting
-  Proposed areas for housing
-  New planting



Concept Plan
Cross Common Road
Dinas Powis
February 2015
Scale 1: 1250
File ref. 5360



APPENDIX C - METHOD STATEMENT: SITE CLEARANCE & REPTILES

1. Following habitat assessment, it was considered that the site has the potential to support reptiles (particularly slow worm (*Anguis fragilis*), common lizard (*Lacerta vivipara*) and grass snake (*Natrix natrix*)). The presence of these species should be assumed (unless otherwise determined by survey), hence the need for a Method Statement to ensure that works are carried out in such a way as to avoid harm to these species.
2. Vegetation will be maintained as short as possible through the use of horse and pony grazing. Rougher / ranker areas of the fields will be grazed preferentially with horses and ponies at more intense levels in order to reduce their overall height.
3. Trees and understorey vegetation will be cleared from directly affected areas only e.g. areas to be built on or forming part of any landscaping scheme where they cannot be retained. IT SHOULD BE NOTED THAT CLEARANCE OF TREES AND SCRUB WILL BE UNDERTAKEN UNDER THE AUSPICES OF A DEVELOPMENT LICENCE IN RESPECT OF DORMICE AND THEREFORE PARTICULAR CARE SHOULD BE TAKEN TO AVOID THIS WHERE IT HAS NOT BEEN PREVIOUSLY AUTHORISED
4. Trees and understorey vegetation will be cleared to ground level using chainsaws, brushcutters or specialised low ground pressure plant. Arisings will be saved to create two hibernacula on retained / unaffected land; excess material will be taken off site and disposed of appropriately. (This will be carried out during November-February to minimise impacts on roosting bats and nesting birds).
5. All ground breaking operations affecting potential or discovered hibernacula (e.g. rubble piles, tree stumps and roots) on site will only be cleared once day time temperatures are consistently over 12°C for a period of at least seven days as otherwise reptiles may be killed or injured as a result of inconsistent (low) temperatures (during the day and night) and low prey availability. Potential hibernacula will only be dismantled by hand unless the supervising ecologist gives the approval for machine dismantling.
6. Clearance of grassland (with the exception of potential hibernation features) will be undertaken in the winter months to avoid killing and injuring reptiles (and amphibians, including great crested newts). If this is not possible, then the orientation of the cutting will be designed to push reptiles into unaffected areas once the areas for clearance have been identified without having to undertake a full translocation exercise.
7. If for whatever reason vegetation cannot be removed in the winter months and has to be cleared between April and October inclusive, it will be cut and raked as short as possible, ≤ 30 mm wherever possible. Vegetation will be cut in three phases. The first phase will reduce the vegetation height to 75mm; the second will reduce it to $\approx 30 - 50$ mm; the third phase will reduce the height to as close to ground level as possible, but no higher than 30mm. There will be a minimum time delay of 24 hours and a maximum delay of 48 hours between the first and second cuts.
8. The vegetation will be maintained as close to bare ground as possible either by spraying or ongoing repeated cutting using brush cutters with knife blades to ensure

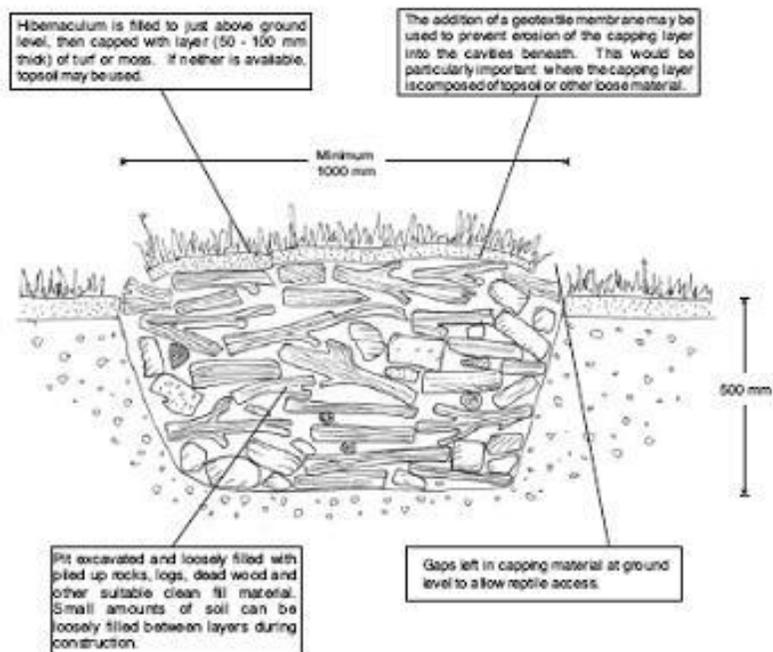
that there is no potential for reptiles to utilise the site after the initial clearance. The use of tractor towed flails and mowers in the open fields will be permitted at the discretion of the supervising ecologist. Reptile fencing will not be required as long as the bare ground / short vegetation habitat is maintained.

9. If reptiles are observed within the clearance area during the works, a decision on how to deal with them will be made on site in light of the conditions on site at the time and the state of the animals themselves. There are three options for dealing with them:
 - It may be possible to leave the animals alone to find their own way into cover, depending on where they are seen, what they are doing and their apparent activity levels; or
 - Capture, remove from site and take into temporary captivity until such time as they can be released adjacent to the cleared area (a vivarium has been prepared in case it is required); or
 - Should conditions allow, capture and translocate the animals to a safe area immediately adjacent to the site.
10. Potential hibernacula will only be cleared once day time temperatures are consistently over 12°C for a period of at least seven days as otherwise reptiles may be killed or injured as a result of inconsistent (low) temperatures (during the day and night) and low prey availability. Potential hibernacula will only be dismantled by hand unless the supervising ecologist / and or LPA ecologist gives the approval for machine dismantling.
11. The vegetation clearance will be supervised by a suitably experienced ecologist. No work areas with the potential for reptiles to be present will be subject of any ground breaking without the implementation of this method statement unless the prior approval of the supervising ecologist and / or the LPA ecologist has been sought and obtained.
12. The supervising ecologist will have the facility to determine whether areas can or cannot be cleared and make alterations to the method statement on site based on the prevalent on-site conditions.

APPENDIX D - REPTILE HIBERNACULA DESIGN OPTIONS

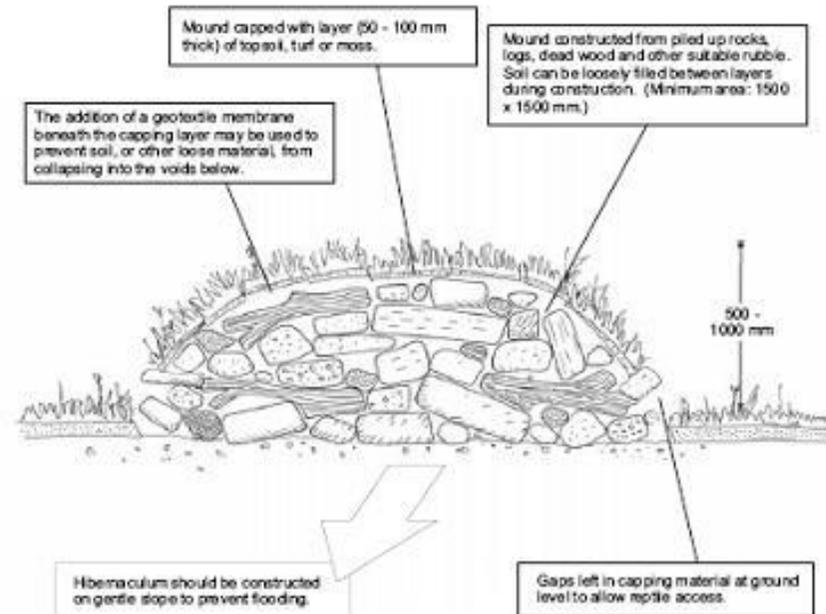
Hibernaculum on free-draining ground

Where ground conditions allow, the hibernaculum should be incorporated into a shallow pit. This design is more likely to remain frost-free, and will be less obtrusive and thus unlikely to be subject to interference.



Hibernaculum on impermeable ground

Where ground conditions are impermeable, then an 'above-ground' or mounded design should be utilised in order to prevent the hibernaculum from flooding. This design should also be used if it is not possible to excavate a pit for any other reason.





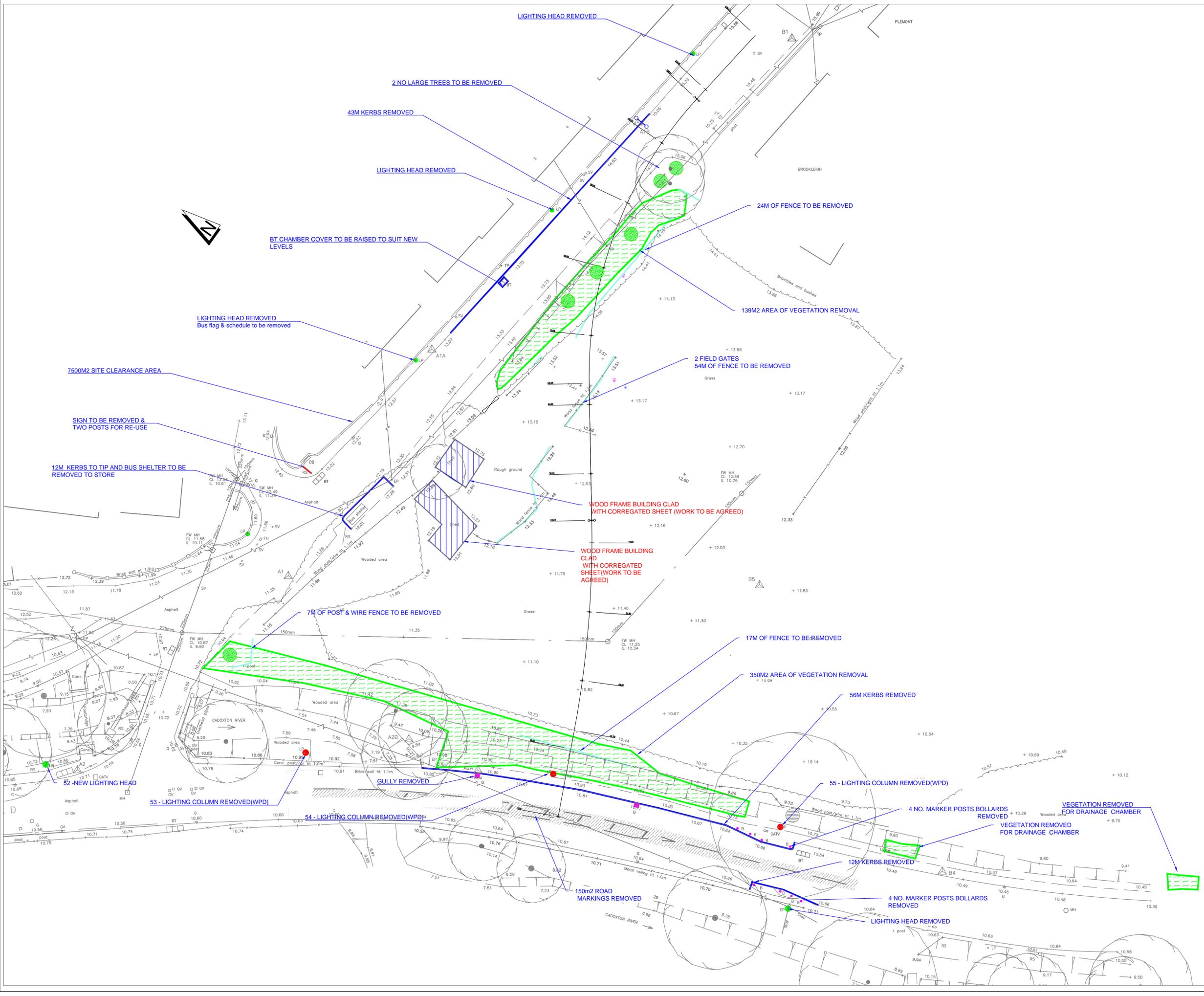
KEY

-  Existing hedgerows
-  Existing trees for retention
-  Proposed new perimeter planting
-  Proposed areas for housing
-  New planting

HARMERS
 TOWN PLANNING AND DEVELOPMENT
 CONSULTANTS

Concept Plan
 Cross Common Road
 Dinas Powis
 February 2015
 Scale 1: 1250
 File ref. 5360

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KEY

- 1. for detail of Street Lighting site clearance see Dwg. 1302 and Street Lighting Schedule.
- 2. all tree / vegetation removal must be under the supervision of the appointed Ecologist and to be as per the submitted method statement .see dwg 1301
- 3. For Detail of the sign removal refer to dwg 1201

Symbol	Description
[Blue outline]	COVERS TO BE ADJUSTED
[Blue hatched]	BUILDING TO BE REMOVED
[Green hatched]	VEGETATION CLEARANCE - 508m2
[Blue dashed line]	EXISTING KERB REMOVAL - 123m
[Red dashed line]	FENCE TO BE REMOVED - 102m
[Black hatched]	LINES TO BE REMOVED -150m2
[Thick black line]	AREA OF SITE CLEARANCE - 7500m2
[Pink square]	GULLIES REMOVED - 2 no.
[Pink circle]	BOLLARDS REMOVED - 8no.
[Green circle]	LIGHTING COLUMNS REMAIN (new lanterns) - 2no.
[Red circle]	LIGHTING COLUMNS REMOVED - 6no.
[Green circle with cross]	LARGE TREE OVER 500MM 6 NO TO BE REMOVED
[Green circle]	APPROX 23 NO TREES UNDER 200MM (NOT INDICATED ON PLAN)

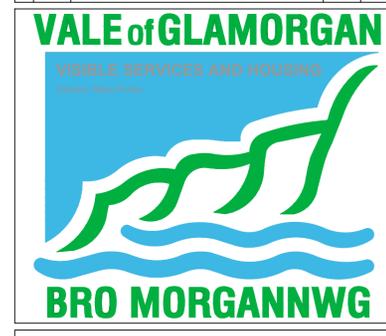
VEGETATION NOTE

Wherever possible, all woody hedgerow material will be translocated to the mitigation area. It is not possible at this stage to categorically state how much material is available and or suitable for translocation; any and all shortfalls will be made up with new planting. No more than 50m of hedge will be removed in any one day.

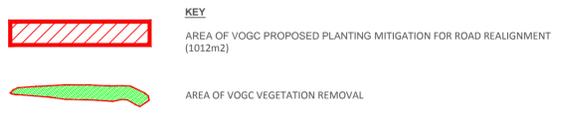
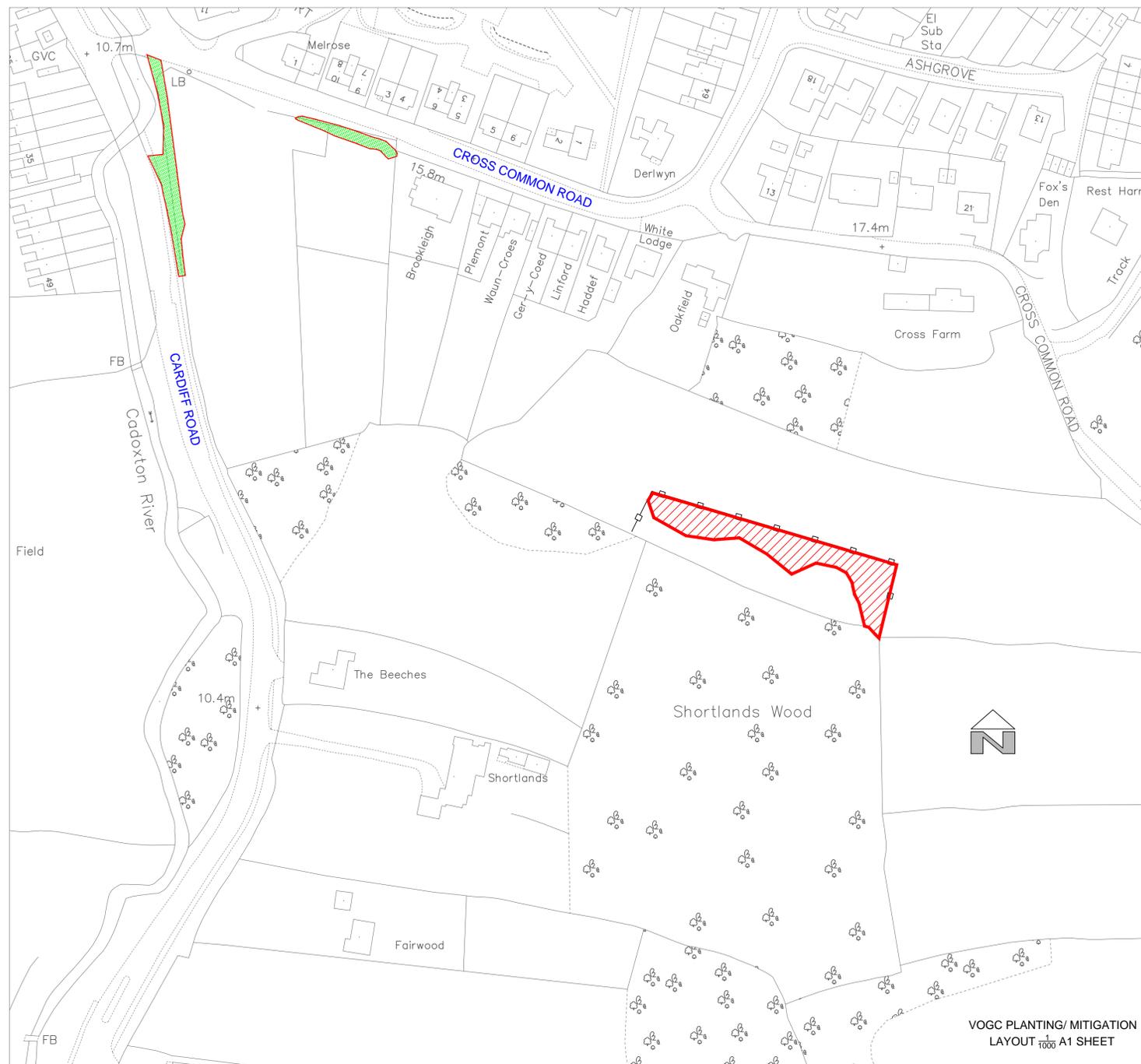
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Mac'r map bwn yn seiliedig ar ddatau yd y Ordnance Survey gyda chaniatod y Ordnance Survey ar ran Rheolwr Llyfrau Ei Mawrhydi © Hawlfraint y Goron. Mae atgynhyrchu heb ganiatod yn torri hawlfraint y Goron a gall hyn arwain at erlydd neu achos sifil.
Cynnyr Bro Morgannwg rhif trwydded 100023424, 2008.

Rev	By	Description of Amendment	Revisions	CHK BY	Date
A	KJS	UPDATED TEXT REGARDING VEGETATION REMOVAL			OCT 16



HIGHWAYS AND ENGINEERING			
Client	The Vale of Glamorgan Council		
Project	CROSS COMMON ROAD		
Drawing Title	PROPOSED JUNCTION LAYOUT SITE CLEARANCE CONSTRUCTION ISSUE		
Drawn	KJS	Scale	1:250
Date	OCT 16	Project No.	1391
Checked		File	201
Date		Rev	A



New Hedgerow planting
Planting to be in a double staggered row 500mm apart with overall trench width of 1.00m at 0.30m cts

Hedge will be gapped up with hawthorn, hazel and blackthorn; all plants to be 40-60cm cell grown stock. All plants to be fitted with spiral guards. Existing and gapped up sections hedge to be protected with post and stock net fence with one strand barbed wire 1.0m from planting lines.

Hedging plants to be 40-60cm cell grown stock

Crataegus monogyna	Cm	40-60cm Root Cell
Corylus avellana	Ca	40-60cm Root Cell
Cornus sanguinea	Cs	40-60cm Root Cell
Ilex aquifolium	Ia	40-60cm Root Cell
Ligustrum vulgare	Lv	40-60cm Root Cell
Prunus spinosa	Ps	40-60cm Root Cell
Rosa canina	Rc	40-60cm Root Cell
Viburnum opulus	Vo	40-60cm Root Cell

- New planting management:**
- All areas identified for and subject of new and replacement planting and habitat improvement will be managed in accordance with the recommendations contained in *Hedgerows a guide to wildlife and management* (PTES) and *Hedgerow management, dormice and biodiversity* (English Nature, Report 454, 2002) i.e. there will be no intensive felling of hedges or aggressive scrub and woodland management wherever this does not conflict with other regulatory requirements (e.g. highways).
 - For a minimum of five years following any new planting, the planting will be inspected at regular intervals (1 check per week for the first month; thereafter 2 checks per month for 1 month then 1 check per month until October 2017. Thereafter, vegetation will be checked once per year in the summer (July)). Any and all losses will be replaced as soon as possible and subject to appropriate management to ensure its establishment;
 - Protective fencing will be required to prevent any possibility of damage until the vegetation is fully established. This will be installed immediately following the new planting;
 - Any and all lighting will be directed away from retained, newly planted and improved habitats, and in particular the wildlife corridors across the site, to reduce light pollution and disturbance to dormice. The use of shields and baffles may be required;
 - All new planting, gapping up etc. implemented as part of this licence application will be allowed to establish itself before management is implemented. The management of the hedge alongside Cardiff Road will maintain it at a minimum winter height of 3m (excluding existing trees). Cutting along the western side and top will potentially be on annual basis as it fronts onto Cardiff Road. Trimming on the eastern side will be undertaken no more than once every two years (or less frequently wherever possible). Management, where tractor mounted machinery is required will utilise oscillating blade cutters in preference to flails.

VEGETATION NOTE

Wherever possible, all woody hedgerow material will be translocated to the mitigation area. It is not possible at this stage to categorically state how much material is available and or suitable for translocation; any and all shortfalls will be made up with new planting. No more than 50m of hedge will be removed in any one day.

NATIVE BLOCKS AND WOODLANDS

The mix of species will vary according to the location of the planting.

- Large and small woodland blocks will have large range of species and be planted at 1.50m cts
- Planting within easements will omit trees and contain smaller shrubs and groundcover
- Native blocks in buffer strips will have a wide variety of species and be planted at 1.20m cts
- Native blocks within the housing layouts will have a limited range of species.

Due to the current prevalent Ash disease - ash will not be included in the planting mix. The composition of the native blocks varies according to location and setting for each block.

Plants should be planted generally in not less than groups of 5-9. Some blocks with a low total number may in numbers less than 5. Planting not to be random but in sinuous lines to assist maintenance operations. Plants to be 40-60cm cell grown stock except Hedera. All plants to be given rabbit protection - netguards with double stakes (not spiral guards)

TREE PLANTING

All trees except feathered trees to be rootballed. All trees to have spiral guards except street trees. Root barriers are required where trees are within 2.00m of proposed or existing services.

Habitat losses and gains summary table

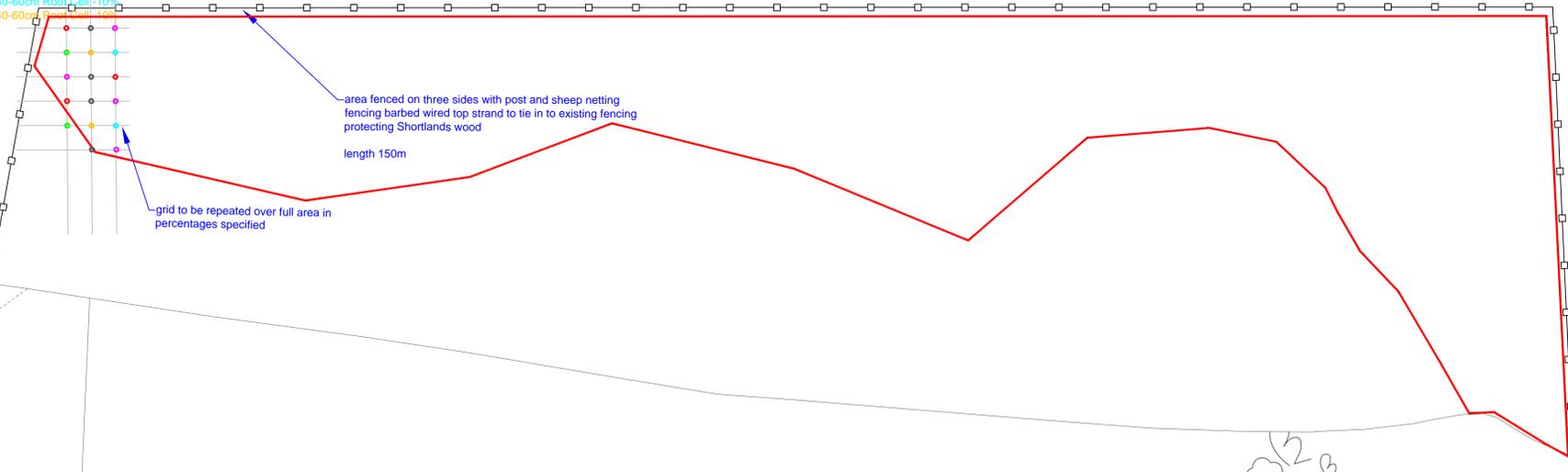
Habitat	Loss	Gain
Hedgerow	0.08ha / 180m	0.09
Hedgerow improvements	-	0.03
Scrub / tree canopy	0.3ha	-
New scrub and woodland planting	-	0.38ha
Totals	0.38	0.50ha
TOTAL PHYSICAL HABITAT GAIN		0.12ha
Improvements to Shortlands Wood	-	1.3ha
HABITAT GAIN (INCLUDING IMPROVEMENTS)		1.42

Proposed activity	Timing	Responsible person / body / notes
Search of hedge by ecologist	W/c 17 October 2016 (or as soon as licence is received)	Licensed ecologist / VoG
Coppicing of hedge to 500mm	w/c 17 October 2016 (or as soon as licence is received)	VoG / licensed ecologist
Excavation of hedgerow roots and other vegetation	Before w/e 21 October 2016 (or as soon as hedge is prepared)	VoG / licensed ecologist
Preparation of new planting area (fencing, soil preparation)	From w/c 17 October 2016	VoG / licensed ecologist
Planting of new scrub area	From w/c 17 October 2016; to be completed before end February 2017	VoG / licensed ecologist
Monitoring of new planting	Ongoing (immediately - 1 check per week for the first month; thereafter 2 checks per month for 1 month then 1 check per month until October 2017.	VoG / licensed ecologist
Erection of pole mounted dormouse boxes	Period starting October 2016	VoG / licensed ecologist
Monitoring of dormouse boxes	3 times per year (May, July and September) 2017 (or as soon as vegetation becomes sufficiently established) - 2020 (5 years)	Licensed ecologist

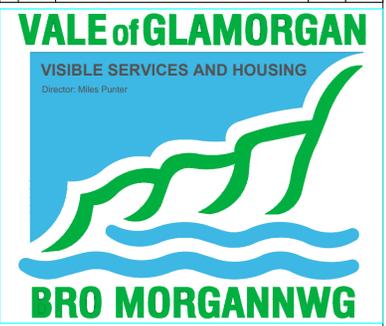
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"Mae'r map hon yn seiliedig ar ddeunydd yr Ordnance Survey gyda chaniatod Yr Ordnance Survey ar ran Rheolwr Llyfrfa Ei Mawrhydi © Hawffraint y Goron. Mae atgynhyrchu heb ganiatod yn torri hawffraint y Goron a gall hyn arwain at erlyriad neu achos sifil." Cyngor Bro Morgannwg rhif trwydded 100023424, 2008.

- SMALL TREES/LARGE SHRUBS AT 1.5M CENTRES APPROX 400 PLANTS**
- Crataegus monogyna 40-60cm Root Cell -20%
 - Corylus avellana 40-60cm Root Cell -20%
 - Cornus sanguinea 40-60cm Root Cell -20%
 - Viburnum opulus 40-60cm Root Cell -10%
 - Prunus spinosa 40-60cm Root Cell -10%
 - Sambucus nigra 40-60cm Root Cell -10%

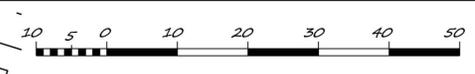


VOGC PLANTING/ MITIGATION DIAGRAMMATICAL PLANTING LAYOUT



HIGHWAYS AND ENGINEERING

Client	The Vale of Glamorgan Council						
Project	CROSS COMMON ROAD PROPOSED JUNCTION LATOUT						
Drawing Title	PLANTING/ MITIGATION SCHEDULE VOGC JUNCTION ONLY						
Drawn by	KS	Scale	1:1000	Project No.	1391	Drawing No.	1301
Date	OCT 16	File		Rev	A		
Checked		Window					
Date							



THE CONTRACTOR IS TO COMPLY IN ALL RESPECTS WITH CURRENT BUILDING LEGISLATION, N.H.S.C. AND BUILDING REGULATIONS WHETHER OR NOT SPECIFICALLY STATED ON THIS DRAWING.

THIS DRAWING MUST BE READ & CHECKED AGAINST ANY STRUCTURAL, GEOTECHNICAL OR OTHER SPECIALIST DOCUMENTATION OR PLANS PROVIDED.

THIS DRAWING IS NOT INTENDED TO SHOW DETAILS OF FOUNDATIONS, GROUND CONDITIONS OR GROUND CONTAMINANTS. EACH AREA OF GROUND RELIED UPON TO SUPPORT ANY STRUCTURE DEPICTED (INCL. DRAINAGES) MUST BE INVESTIGATED BY THE CONTRACTOR. A SUITABLE METHOD OF FOUNDATION SHOULD BE PROVIDED ALLOWING FOR EXISTING GROUND CONDITIONS. ANY EARTHWORK CONSTRUCTIONS SHOWN INDICATE TYPICAL SLOPES FOR GUIDANCE ONLY AND SHOULD BE FURTHER INVESTIGATED BY A SUITABLE EXPERT.

WHERE EXISTING TREES ARE SHOWN TO BE RETAINED THEY SHOULD BE SUBJECT TO A FULL ARBORICULTURAL INSPECTION FOR SAFETY. A SUITABLE METHOD OF FOUNDATION IS TO BE PROVIDED TO ACCOMMODATE PROPOSED TREE PLANTING.

General Notes

EXTERNAL WORKS LEGEND	
	PLANNING APPLICATION BOUNDARY
19	PLOT NUMBERS
#	CAR PARKING ALLOCATION
#	AFFORDABLE UNITS
D	GATE POSITION
	DUEL ASPECT / FOCAL WINDOW
	TIMBER FENCE - REFER TO ENCLOSURE PLAN 104
	1.1m VERTICAL RAILINGS
	1.1m HORIZONTAL TIMBER FENCE
	1.8m BRICK SCREEN WALL
	BIN COLLECTION POINT
	PUBLIC FOOTPATH LINK FROM POS
	BLOCK PAVING / ALTERNATE ROAD SURFACE TBA
	INDICATIVE ON STREET PARKING
	EQUIPPED PLAY AREAS
LANDSCAPING LEGEND REFER TO LANDSCAPING DETAILS	
	INDICATIVE PROPOSED TREES
	PROPOSED HEDGE
	EXISTING TREES TO BE RETAINED
	EXISTING ROOT PROTECTION ZONE

HOUSE TYPE ACCOMMODATION SCHEDULE				
House Name	Ref.	Beds	Size	Number
Farnham	Fa	05	1515	05no
Bonvilston	Bo	04	1321	08no
Tenbury	Te	04	1320	04no
Barnford	Ba	04	1215	05no
Carcroft	Ca	04	1075	04no
Broughton	Br	03	1008	04no
1 Bed Apartment	1B	01	460	06no
Ogmore	Og	02	936	11no
Wye	Wy	03	1063	02no
4 bed	4B	04	1167	01no
Site Total				50 no

Rev	Date	By	Comment

RESIDENTIAL DESIGN
PLANNING
CIVIL ENGINEERING DESIGN

Hammonds Yates

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Client
Edenstone Homes Ltd

Project Title
**Land Off Cardiff Road
Dinas Powys**

Drawing Title
Planning Layout

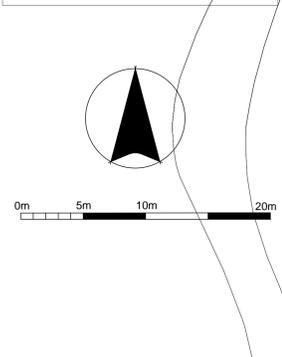
Drawing Status

Drawn By DA	Scales 1:500	A1	Date Feb 2017
Job No. 1628	Drawing No. 100	Rev.	

DO NOT SCALE THIS DRAWING. ALL DIMENSIONS AND LEVELS TO BE VERIFIED PRIOR TO BUILDING OPERATIONS OR CONSTRUCTION.
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- LANDSCAPING LEGEND**
- EXISTING TREES TO BE RETAINED AND PROTECTED
 - EXISTING TREE TO BE REMOVED
 - EXISTING TREE ROOT PROTECTION AREA
 - PROPOSED TREE SPECIES NEW SHRUB
 - SHRUB BED / IMPACT PLANT
 - PROPOSED HEDGE
 - NATIVE SCREEN WHIPS
 - ORNAMENTAL CLIMBER
 - TURF - FRONT GARDENS, CLOSE MOWN
 - REAR GARDEN - ROTOVATE AND LEVEL
 - COMMUNAL AREAS WILDFLOWER GRASS SEED
 - COMMUNAL AREAS WILDFLOWER GRASS SEED
 - GRAVEL - Golden knapped flint
- NOTES**
- Refer to Architects/Engineers drawing for details of levels, buildings, hard surfaces, retaining structures, visibility splay, services and fences. Building foundations with respect to trees to be in accordance with the NHCC Guidelines Chapter 4.2.
- Refer to Arboricultural Tree Survey Report, Impact Assessment and Protection Plan (Treesecore, J. Wilkes May 17) for details of existing trees to be retained, removed and protection measures.
- All tree surgery carried out in accordance with BS3998:2010 Tree Works. Refer to Ecologist Survey and Recommendations for details of mitigation measures required prior, during and after completion of construction works, bird and bat box type and location and aftercare management of on site vegetation. Ref. Celtic Ecology.
- Drawing to be read in conjunction with 994/PA/03 Dormouse Mitigation Plan.



EXISTING TPO TREES - OAK
RETAIN AND PROTECT RPA
STREAM CLEARED OF DEBRIS AND BLOCKAGES AS ECOLOGY
RECOMMENDATIONS

EXISTING TREES AND HEDGES (OFF SITE)
RETAINED AND PROTECTED TO UPDATED
ARB. ASSESSMENT RECOMMENDATIONS

EXISTING TREES AND HEDGES ON SHORTLANDS WOOD
BOUNDARY (OFF SITE) RETAINED AND PROTECTED
TREE WORKS FOR SAFETY IN ACCORDANCE WITH
UPDATED ARBORICULTURAL METHOD STATEMENT
REF. TREESCORE

PROPOSED RESIDENTIAL DEVELOPMENT
LAND OFF CARDIFF ROAD, DINAS POWYS for
EDENSTONE LTD

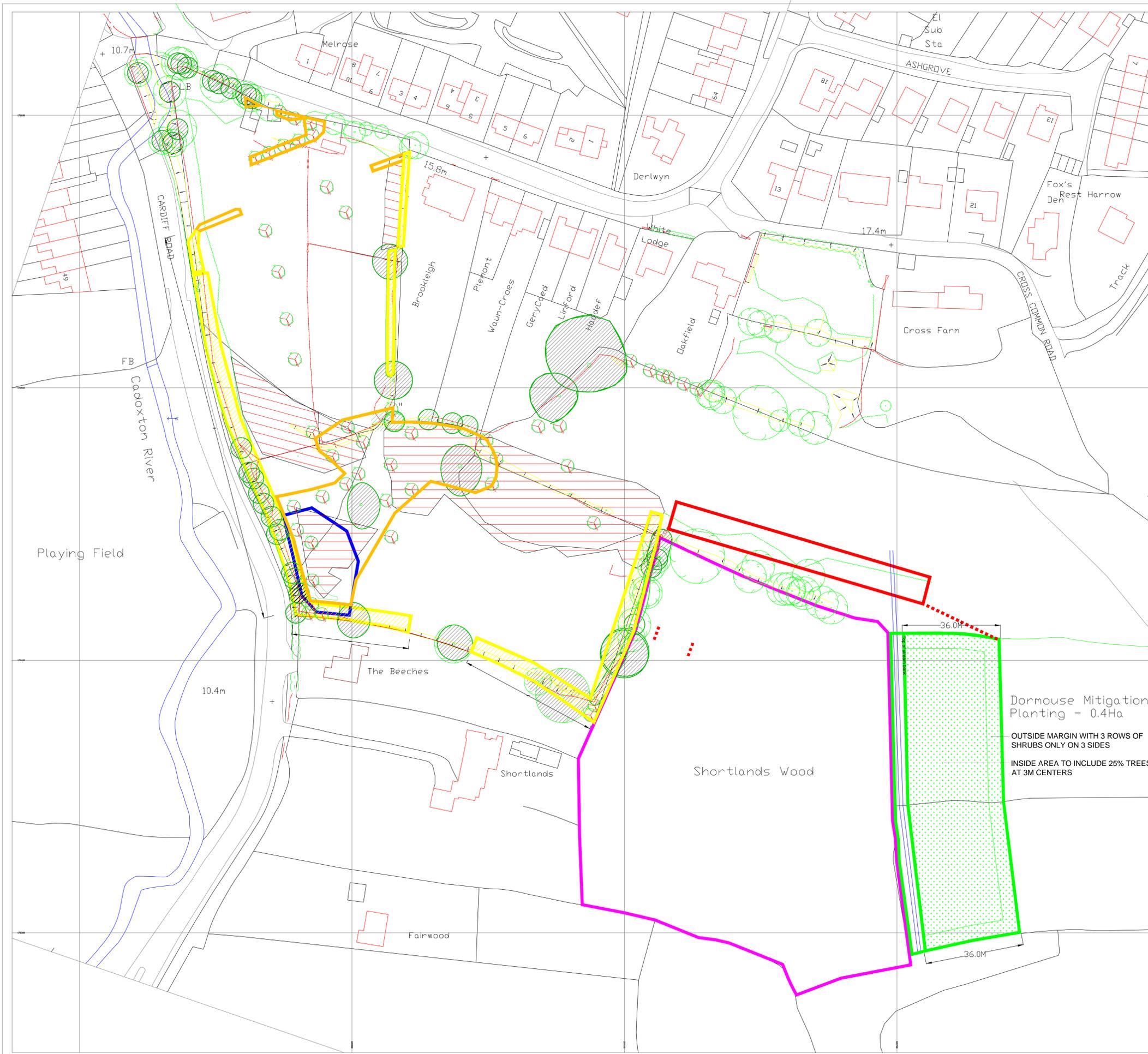
TREE CONSTRAINTS AND LANDSCAPE PROPOSALS
PLANNING SHEET 1 OF 2 1:200 (A0)

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E-MAIL: md@md-land.co.uk

Date: 3/3/17 Drawn: MDD Checked: Drawing No. 994/PA/01F

Rev. F: Minor amendments to text for clarity, 10-10-17
Rev. E: Amendments to Site Layout, Landscape updated to co-ordinate. Drawing cross referenced with
dwg No 994/PA/03, Dormouse Mitigation, 8-10-17
Rev. D: Revised Site Layout, planting and maintenance program updated in accordance with ecology
recommendations, 18/9/17
Rev. C: Minor amendments to Site Layout, plot 27 garage relocated outside RPA, bin collection point
added, Planning updated, 19-5-17
Rev. B: House shade layers omitted, Minor amendments to Site Layout, Planning updated, 5-5-17
Rev. A: Tree protection omitted - refer to arboricultural report ref. Treesecore. Minor amendments to Site
Layout, Planning updated, 30-4-17

All setting out dimensions to be site confirmed prior to works commencing and any
discrepancies confirmed to architect. This drawing is to be read in conjunction with all
other architectural and structural engineers drawings.



KEY

- PREVIOUS DORMOUSE PLANTING MITIGATION CARRIED OUT BY VALE OF GLAMORGAN (1012sq.M)
- AREA OF HOUSING DEVELOPMENT PLANTING
New Trees - 50 No.
New Native Hedge - 480 lin.M
Native Screen whips - 425 sq.M
Ornamental/Wildlife value shrubs - 585 sq.M
Grass/Wildflower Area - 2,400 sq.M
Attenuation/stream - 600 sq.M
Refer to Landscape Proposal drawings 994/PA/01F and 02F
- PROPOSED POND / ATTENUATION BASIN OUTLINED BLUE
- AREA OF VEGETATION REMOVAL FOR HOUSING DEVELOPMENT (Approx. 4,575 sq.M)
- AREA OF SHORTLANDS WOOD FOR HABITAT MANAGEMENT (1700M Sq.M DEVELOPER)
- HEDGE TO BE IMPROVED AS PART OF MITIGATION STRATEGY 390 lin.M. Refer to Landscape Proposal drawings 994/PA/01F and 02F
- AREA OF PROPOSED EXTENSION PLANTING TO SHORTLANDS WOOD FOR DORMOUSE MITIGATION (4000 M SQ BY DEVELOPER). See Detail below for plant setting out. DORMOUSE MITIGATION PLANTING. APPROX 1800 NO. PLANTS
Plants to be at 1.5M centers from the back of existing stream bank
All grown in root cells, size 40-60cm from local provenance stock.
Planted with a new square post and sheep net fence on three sides.
All plants to be given plastic spiral rabbit guards with support cane.
- EXISTING TREES AND NATIVE HEDGE TO BE RETAINED WITHIN HOUSING DEVELOPMENT

SCALE 1:500

DORMOUSE MITIGATION PLANTING; OUTSIDE 3 ROWS OF SMALL TREES / LARGE SHRUBS AT 1.5M CENTRES ON 3 SIDES. APPROX 450 PLANTS.

<i>Crataegus monogyna</i>	Cm	40-60cm Root Cell - 20% = 90 No.
<i>Corylus avallana</i>	Ca	40-60cm Root Cell - 20% = 90 No.
<i>Cornus sanguineum</i>	Cs	40-60cm Root Cell - 20% = 90 No.
<i>Prunus spinosa</i>	Ps	40-60cm Root Cell - 10% = 45 No.
<i>Viburnum opulus</i>	Vo	40-60cm Root Cell - 10% = 45 No.
<i>Salix cinerea</i>	Sc	40-60cm Root Cell - 10% = 45 No.
<i>Sambucus nigra</i>	Sn	40-60cm Root Cell - 10% = 45 No.

New stock fence on outside field boundary

AREA FENCED ON THREE SIDES WITH POST AND SHEEP NET FENCING BARBED WIRE TOP STRAND

PLANTS AT 1.5M CENTERS FROM BACK OF EXISTING DITCH

OUTSIDE 3 ROWS OF SHRUBS ONLY ON OUTSIDE MARGIN

INSIDE AREA TO INCLUDE 25% TREES AT 3M CENTERS

INSIDE AREA PLANTED WITH 25% TREES AND 75% SHRUBS AT 1.5M CENTERS. TREES AT 3M CENTERS IN SINGLE SPECIES GROUPS OF 7-10 DISTRIBUTED EVENLY THROUGHOUT = 1360 PLANTS

<i>Betula pubescens</i>	Bp	40-60cm Root Cell - 5% = 70 No.
<i>Carpinus betulus</i>	Cb	40-60cm Root Cell - 5% = 70 No.
<i>Prunus avium</i>	Pa	40-60cm Root Cell - 5% = 70 No.
<i>Quercus robur</i>	Qr	40-60cm Root cell - 10% = 135 No.
<i>Crataegus lavigata</i>	Cm	40-60cm Root Cell - 20% = 270 No.
<i>Corylus avallana</i>	Ca	40-60cm Root Cell - 40% = 540 No.
<i>Viburnum opulus</i>	Vo	40-60cm Root Cell - 10% = 135 No.
<i>Sambucus nigra</i>	Sn	40-60cm Root Cell - 5% = 70 No.

DORMOUSE MITIGATION - WOODLAND EXTENSION TO SHORTLANDS WOOD. PLANTING DETAIL. 1:200

Rev.C. Dormouse mitigation area extended. Trees included in planting mix. 20-10-17
 Rev.B. Dormouse Mitigation Areas (existing and proposed) linked to Shortlands Wood, contours omitted, grid square colour changed. 15-10-17
 Rev.A Areas updated to co-ordinate with proposed Housing Development planting, vegetation to be removed indicated and planting quantified. 10-10-17

All setting out dimensions to be site confirmed prior to works commencing and any discrepancies confirmed to architect. This drawing is to be read in conjunction with all other architectural and structural engineers drawings.

PROPOSED RESIDENTIAL DEVELOPMENT
 LAND OFF CARDIFF ROAD, DINAS POWYS for
 EDENSTONE LTD

DORMOUSE MITIGATION PLANTING
 PLANNING 1:500 (A0)

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Date: 6/10/17 Drawn: MDD Checked: Drawing No. 994/PA/03C